Access DB# 117279

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Raymond Alejandro Examiner #: 76895 Date: 03/17/04
Art Unit: 1745 Phone Number 305 571 272-1282 Serial Number: 09/960204 (09/960204)
Mail Box and Bldg/Room Location: Remsen 6B-59 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Medical Device Battery Pack with Active Status Indication

Inventors (please provide full names): Vaisnys, et al

Earliest Priority Filing Date: 09/21/07

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please, see claims 1-13 (attached copy) for specific subject matter to be searched.

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STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: EL	NA Sequence (#)	STN B 13.10
Searcher Phone #:	AA Sequence (#)	Dialog 1351.38
Searcher Location:	Structure (#)	Questel/Orbit
Date Searcher Picked Up: 3-23-04	Bibliographic ✓	Dr.Link
Date Completed: 3/24/04	Litigation	Lexis/Nexis
Searcher Prep & Review Time: 10	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time: 75	Other	Other (specify)

PTO-1590 (8-01)

Dialog search

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$%^Dialog;HighlightOn=;HighlightOff=;
? show files
File   6:NTIS 1964-2004/Mar W3
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
File   2:INSPEC 1969-2004/Mar W2
         (c) 2004 Institution of Electrical Engineers
File   5:Biosis Previews(R) 1969-2004/Mar W2
         (c) 2004 BIOSIS
File   8:Ei Compendex(R) 1970-2004/Mar W1
         (c) 2004 Elsevier Eng.  Info. Inc.
File  73:EMBASE 1974-2004/Mar W2
         (c) 2004 Elsevier Science B.V.
File  94:JICST-EPlus 1985-2004/Mar W2
         (c)2004 Japan Science and Tech Corp(JST)
File 155:MEDLINE(R) 1966-2004/Mar W2
         (c) format only 2004 The Dialog Corp.
File 347:JAPIO Nov 1976-2003/Nov(Updated 040308)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200419
         (c) 2004  Thomson Derwent

? ds

Set      Items   Description
S1       22359   DEFIBRILLAT?R?
S2       25373   (DUAL? OR TWIN? OR TWO OR DYAD? OR DOUBLE? OR DUPLE? OR PA-
                 IR?)(3N)((POWER OR ELECTRIC? OR ELEC? ? OR ENERG? OR VOLT? OR
                 CURRENT?)(2N)(SOURC? OR SUPPLY? OR SUPPLIES OR SUPPLIED OR PA-
                 CK OR PACKS))
S3       47957   (FIRST? OR 1ST OR PRIMARY OR PRINCIPAL? OR MAIN)(3N)((POWER
                 OR ELECTRIC? OR ELEC? ? OR ENERG? OR VOLT? OR CURRENT?)(2N)(-
                 SOURC? OR SUPPLY? OR SUPPLIES OR SUPPLIED OR PACK OR PACKS))
S4       28758   (SECOND? OR 2ND OR ANCILLAR? OR ANCILAR? OR AUXILLAR? OR A-
                 UXILAR?)(3N)((POWER OR ELECTRIC? OR ELEC? ? OR ENERG? OR VOLT?
                 OR CURRENT?)(2N)(SOURC? OR SUPPLY? OR SUPPLIES OR SUPPLIED OR
                 PACK OR PACKS))
S5      433023   BATTERY OR BATTERIES
S6          18   S1 AND S2
S7          28   S1 AND S3
S8          11   S1 AND S4
S9           7   S7 AND S8
S10         15   (S7 OR S8) AND S5
S11        755   S1 AND S5
S12         16   (S8 OR S9 OR S10) NOT S6
S13         15   S7 NOT (S6 OR S12)
S14         17   RD S6 (unique items)
S15         16   RD S12 (unique items)
S16         12   RD S13 (unique items)

? t s14/7,de/all

 14/7,DE/1      (Item 1 from file: 2)
DIALOG(R)File   2:INSPEC
(c) 2004 Institution of Electrical Engineers. All rts. reserv.

7236166   INSPEC Abstract Number: A2002-10-8770F-021, B2002-05-7510D-040
 Title: Two-electrode biopotential amplifier with current-driven inputs
  Author(s): Dobrev, D.; Daskalov, I.
  Author Affiliation: Centre of Biomed. Eng., Bulgarian Acad. of Sci.,
Sofia, Bulgaria
  Journal: Medical & Biological Engineering & Computing    vol.40, no.1
p.122-7
  Publisher: Peter Peregrinus for Int. Fed. Med. & Biol. Eng,
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Publication Date: Jan. 2002 Country of Publication: UK
CODEN: MBECDY ISSN: 0140-0118
SICI: 0140-0118(200201)40:1L.122:EBAW;1-5
Material Identity Number: M218-2002-001
U.S. Copyright Clearance Center Code: 0140-0118/02/$20.00
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P); Theoretical (T)
Abstract: A circuit was developed for a differential two-electrode biopotential amplifier. Current sources at the amplifier inputs were controlled by the common-mode voltage. This principle is well known in telephony for interfacing the telephone line with analogue-type phones. A low impedance of about 1 k Omega was obtained between each input and the common point of the circuit. The differential input impedance of 60 M Omega was obtained with the use of precision resistors. Considerable reduction in the common-mode voltages of more than 200 times resulted. The circuit can be useful for biosignal acquisition from subjects in areas of very high electromagnetic fields, where high common-mode voltages could saturate the input amplifier stages. The amplifier is considered here in the case of electrocardiogram acquisition. (12 Refs)
Subfile: A B
Descriptors: bioelectric potentials; biomedical electrodes; biomedical electronics; constant current sources; differential amplifiers; electrocardiography; electromagnetic interference
Copyright 2002, IEE

14/7,DE/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2004 Institution of Electrical Engineers. All rts. reserv.

00807170 INSPEC Abstract Number: B75035137
Title: Portable and separable heart monitor and heart defibrillator apparatus
Inventor(s): Saper, L.; Heller, G.; Hitchcoff, D.
Assignee(s): Datascope Corp
Patent Number: US 3865101 Issue Date: 750211
Application Date: 740501
Country of Publication: USA
Language: English Document Type: Patent (PT)
Treatment: Practical (P)
Abstract: The disclosure relates to the switching of power supplies to the two portions of the unit for operation in combination or separately.
Subfile: A B
Descriptors: defibrillators; electrocardiography; patient monitoring; power supplies to apparatus

14/7,DE/3 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2004 BIOSIS. All rts. reserv.

0014365112 BIOSIS NO.: 200300333831
Defibrillator using low impedance high capacitance double layer capacitor
AUTHOR: Mulhauser Daniel F (Reprint); Langguth Al
AUTHOR ADDRESS: Windham, NH, USA**USA
JOURNAL: Official Gazette of the United States Patent and Trademark Office Patents 1271 (3): June 17, 2003 2003
MEDIUM: e-file
ISSN: 0098-1133 _(ISSN print)
DOCUMENT TYPE: Patent
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A low impedance high capacitance double layer capacitor (also known as a "super cap") is used to supply energy to charge a high voltage capacitor. Upon a command from a controller and/or an operator, the high voltage capacitor administers a shock to a patient in order to treat ventricular fibrillation. If a power source is used to augment the double layer capacitor in supplying energy to the high voltage capacitor, the power source charges the capacitor during a dwell time, which is a time between shocks or at start up. Once the decision is made to administer a shock, the high voltage capacitor is charged by the high voltage capacitor and the power source. By adjusting the energy stored in the high voltage capacitor through a voltage limiting device such as a switch mode converter current source, the draw on the power source can be reduced while allowing for a reduced dwell time without affecting the performance of the defibrillator. The use of a double layer capacitor can be used to supply energy to charge a high voltage capacitor without the power supply, and is useful in external and internal defibrillators, and can be used in leadless paddles to allow the operator the greatest freedom of movement.

DESCRIPTORS:
MAJOR CONCEPTS: Cardiovascular Medicine--Human Medicine, Medical Sciences ; Equipment Apparatus Devices and Instruments
DISEASES: ventricular fibrillation--heart disease, therapy
MESH TERMS: Ventricular Fibrillation (MeSH)
METHODS & EQUIPMENT: low impedance high capacitance double layer capacitor--medical equipment; defibrillator--medical equipment

14/7,DE/4 (Item 1 from file: 73)
DIALOG(R)File 73:EMBASE
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04749842 EMBASE No: 1991243196
Physical and dynamic characteristics of DC ablation in relation to the type of energy delivery and catheter design
Lemery R.; Lavallee E.; Girard A.; Montpetit M.
Montreal Heart Institute, 5000 Belanger Street, Montreal, Que. H1T 1C8 Canada
PACE - Pacing and Clinical Electrophysiology (PACE PACING CLIN. ELECTROPHYSIOL.) (United States) 1991, 14/7 (1158-1168)
CODEN: PPCED ISSN: 0147-8389
DOCUMENT TYPE: Journal; Article
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH

We evaluated and compared the in vitro characteristics of direct current ablation using high energy ablation (Hewlett-Packard defibrillator) and a new form of low energy ablation (low energy ablation power supply, Cardiac Recorders, UK). Two new catheters with a large distal electrode have been recently introduced for catheter ablation: a low energy 7F bipolar catheter (Bard) with a contoured distal electrode, and a 7F deflectable catheter with a 4-mm tip (Mansfield). In vitro studies were carried out in a large tank filled with physiological saline while recording voltage, current, and pressure. High speed cinematography at 32,000 frames per second (Cordin, Utah) was done to assess the dynamic behavior of the vapor globe with both systems of energy delivery. We evaluated shocks of 50, 100, 150, 200, and 300 joules with the conventional system, and shocks of 10, 15, 20, 30, and 40 joules with the new system, and also compared the effects of varying catheter design with both systems of energy delivery. The conventional system using high energy showed significant arcing and increases in pressure. Low energy direct current ablation produces nonarcing shocks with 20 joules or less, and significantly less vapor globe and gas formation during arcing shocks, with a shorter duration of increase in pressure. This new system using low energy direct current may reduce the risk and

complications reported with high energy ablations.

MEDICAL DESCRIPTORS:
*catheterization
article; catheter ablation; energy

14/7,DE/5 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015863623
WPI Acc No: 2004-021454/200402
Battery system for semi automated external defibrillator, has pair of power supply to power defibrillator during main operating mode and alternate mode, respectively
Patent Assignee: LAUB G W (LAUB-I); MEIER G C (MEIE-I); VAISNYS G A (VAIS-I)
Inventor: LAUB G W; MEIER G C; VAISNYS G A
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030205988	A1	20031106	US 2001960859	A	20010921	200402 B
			US 2003453312	A	20030603	

Priority Applications (No Type Date): US 2001960859 A 20010921; US 2003453312 A 20030603
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030205988	A1		10	H02J-007/00	Cont of application US 2001960859 Cont of patent US 6577102

Abstract (Basic): US 20030205988 A1
Abstract (Basic):

NOVELTY - A battery pack (110) has battery unit and secondary battery. The battery unit powers electronics and charger of defibrillator (100) during main operating mode. The secondary battery powers micro-controller and LEDs that assist in maintaining integrity of battery unit, during alternate mode when defibrillator is powered OFF and during sleep mode when defibrillator is powered ON.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of powering components of medical device.

USE - For medical device such as semi-automatic external defibrillator (AED).

ADVANTAGE - Provides size reduced battery system that provides sufficient energy to operate defibrillator at reduced maintenance cost.

DESCRIPTION OF DRAWING(S) - The figure shows top sectional view of AED device with battery pack.

AED (100)
battery pack (110)
battery well (120)
latch (130)
spring (132)
latching end (134)
slots (136,138)
ejection spring (137)
pp; 10 DwgNo 1A/5

Title Terms: BATTERY; SYSTEM; SEMI; AUTOMATIC; EXTERNAL; DEFIBRILLATE; PAIR ; POWER; SUPPLY; POWER; DEFIBRILLATE; MAIN; OPERATE; MODE; ALTERNATE; MODE; RESPECTIVE
Derwent Class: S05; X16
International Patent Class (Main): H02J-007/00

14/7,DE/6 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015836673
WPI Acc No: 2003-898877/200382
Automated external defibrillator for cardiac arrest, has power sources that power two circuits and backup to one source coupled to circuitry creating defibrillation shock when power source fails below predetermined level

Patent Assignee: BRINK G D (BRIN-I); OCHS D E (OCHS-I); PICARDO A G (PICA-I); POWERS D J (POWE-I); KONINK PHILIPS ELECTRONICS NV (PHIG)
Inventor: BRINK G D; OCHS D E; PICARDO A G; POWERS D J; BRINK G D B

Number of Countries: 102 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030181950	A1	20030925	US 2002104223	A	20020322	200382	B
WO 200380178	A2	20031002	WO 2003IB624	A	20030218	200382	

Priority Applications (No Type Date): US 2002104223 A 20020322
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030181950	A1		15	A61N-001/39	
WO 200380178	A2	E		A61N-001/39	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT SD SE SI SK SL SZ TR TZ UG ZM ZW

Abstract (Basic): US 20030181950 A1
Abstract (Basic):

NOVELTY - The defibrillator (12) has a power source that powers circuitry for generating a defibrillation shock and another source that powers another circuitry. A backup to the former power source is coupled to the circuitry creating a defibrillation shock when the power source falls below a predetermined level. A microprocessor powered by the latter power source is provided.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of powering the defibrillator.

USE - Used for treating sudden cardiac arrests.

ADVANTAGE - The high power source lasts longer and can be used a backup to the low-power source and the defibrillator is capable of operating even if the low-power source fails, thereby thus shortening the battery-replacement interval and reducing the maintenance costs.

DESCRIPTION OF DRAWING(S) - The drawing shows a perspective view of an automated external defibrillator.

Automated defibrillator (12)
Power-source cassette (15)
Connector (16)
Defibrillator system (20)
Display (24)
pp; 15 DwgNo 1/9

Title Terms: AUTOMATIC; EXTERNAL; DEFIBRILLATE; CARDIAC; ARREST; POWER; SOURCE; POWER; TWO; CIRCUIT; ONE; SOURCE; COUPLE; CIRCUIT; DEFIBRILLATE; SHOCK; POWER; SOURCE; FAIL; BELOW; PREDETERMINED; LEVEL
Derwent Class: P34; S05; T01; U24
International Patent Class (Main): A61N-001/39

14/7,DE/7 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015205953
WPI Acc No: 2003-266488/200326
Dual power source apparatus for implantable medical device, has output and control circuits selectively connected to high and low rate cells of power source
Patent Assignee: MEDTRONIC INC (MEDT)
Inventor: SCHMIDT C L; SKARSTAD P M
Number of Countries: 028 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020183800	A1	20021205	US 2001870097	A	20010530	200326	B
			US 200257419	A	20020125		
WO 200363964	A1	20030807	WO 2003US1861	A	20030122	200361	

Priority Applications (No Type Date): US 200257419 A 20020125; US 2001870097 A 20010530
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020183800	A1		26	A61N-001/18	CIP of application US 2001870097
WO 200363964	A1	E		A61N-001/378	

Designated States (National): CA JP
Designated States (Regional): AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT SE SI SK TR

Abstract (Basic): US 20020183800 A1
Abstract (Basic):
NOVELTY - A high power output circuit (50) configured to deliver electrical pulse therapy and a low power control circuit (52) configured to deliver appropriate stimulation therapy, are selectively connected to high rate cell (60) and low rate cell (62) of power source (54).
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:
(1) implantable medical device; and
(2) method for incorporating power source in implantable medical device.
USE - For implantable medical device (claimed) such as pacemaker/cardioverter/defibrillator (PCD), drug delivery device, neurostimulator, etc.
ADVANTAGE - The high and low rate cells can be operated in combination for approximately the entire useful life of the respective cells.
DESCRIPTION OF DRAWING(S) - The figure shows the simplified schematic circuit diagram of dual power source assembly.
Output circuit (50)
Control circuit (52)
Power source (54)
High rate cell (60)
Low rate cell (62)
pp; 26 DwgNo 2/14
Title Terms: DUAL; POWER; SOURCE; APPARATUS; IMPLANT; MEDICAL; DEVICE; OUTPUT; CONTROL; CIRCUIT; SELECT; CONNECT; HIGH; LOW; RATE; CELL; POWER; SOURCE
Derwent Class: P34; S05
International Patent Class (Main): A61N-001/18; A61N-001/378

14/7,DE/8 (Item 4 from file: 350)

DIALOG(R)File 350:Derwent WPIX
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014990374
WPI Acc No: 2004-178776/200417
Cable retracting and powering apparatus for defibrillator, has circular spring that exerts rotational force on rotatable housing to retract wire in to housing and power source connected between wires

Patent Assignee: KONINK PHILIPS ELECTRONICS NV (PHIG); US PHILIPS CORP (PHIG)
Inventor: RYCZEK K R

Number of Countries: 103 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030233127	A1	20031218	US 2002170936	A	20020613	200417	B
WO 2003105954	A2	20031224	WO 2003IB2408	A	20030604	200417	

Priority Applications (No Type Date): US 2002170936 A 20020613
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030233127	A1		9	A61N-001/39	
WO 2003105954	A2	E		A61N-001/39	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PH PL PT RO RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

Abstract (Basic): US 20030233127 A1
Abstract (Basic):

NOVELTY - The apparatus comprises of a power source that is electrically connected between two wires. A rotatable housing retracts the two wires that are wound around the rotatable housing. One circular spring (302) exerts rotational force on the housing to retract one wire in to the housing. The spring is placed in housing where middle and perimeter of the spring is connected to the wire and the power source terminal respectively.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for retracting and powering a cable on a defibrillator.

USE - Used for retracting and powering cable in defibrillator.

ADVANTAGE - The circular spring exerts rotational force on the rotatable housing, thereby allowing for easy application and retraction of defibrillator cables, and powering the cables to provide a more reliable apparatus. The apparatus allows an operator to automatically retract the cable when the operation of a defibrillator is complete.

DESCRIPTION OF DRAWING(S) - The drawing shows an inside view of a circular housing for a retractable cable.

Circular spring (302)
Ends (306,312)
Middle of circular housing (310)
Cap (314)
Braking device (318)
pp; 9 DwgNo 3/4

Title Terms: CABLE; RETRACT; POWER; APPARATUS; DEFIBRILLATE; CIRCULAR; SPRING; EXERT; ROTATING; FORCE; ROTATING; HOUSING; RETRACT; WIRE; HOUSING ; POWER; SOURCE; CONNECT; WIRE
Derwent Class: P34; S05; V04
International Patent Class (Main): A61N-001/39

14/7,DE/9 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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014836984
WPI Acc No: 2002-657690/200270
Infection control apparatus for implantable heart stimulators comprises pulse generator for delivering electric stimulation pulses to patient's heart
Patent Assignee: ST JUDE MEDICAL AB (SJUD-N)
Inventor: ECKERDAL J; MICSKI E; OBEL M
Number of Countries: 021 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200268048	A1	20020906	WO 2002SE344	A	20020226	200270	B
EP 1365837	A1	20031203	EP 2002700960	A	20020226	200380	
			WO 2002SE344	A	20020226		

Priority Applications (No Type Date): SE 2001668 A 20010227
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200268048	A1	E	16	A61N-001/375	
Designated States (National): US					
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR					
EP 1365837	A1	E		A61N-001/375	Based on patent WO 200268048
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR					

Abstract (Basic): WO 200268048 A1
Abstract (Basic):

NOVELTY - An infection control apparatus comprises a pulse generator for delivering electric stimulation pulses to a patient's heart

DETAILED DESCRIPTION - An infection control apparatus comprises a pulse generator for delivering electric stimulation pulses to a patient's heart through a lead (14) connectable to the pulse generator, possibly through a connector top (12) on a pulse generator housing (10). The pulse generator housing is electrically conductive. The exterior surface of the possible connector top and of a proximal part (16) of the lead are electrically conductive. The proximal part extends to a position which after implantation of the lead is situated between a location beyond the entry into the venous system and the entry into vena cava superior. The generator housing and the electrically conductive surfaces of the proximal lead part and of the possible connector top are adapted to form at least two separate electrodes. A current source is also provided to supply an electric infection control current between the electrodes.

USE - For implantable heart stimulator for delivering electric stimulation pulses to a patient's heart.

ADVANTAGE - A design is obtained which makes it possible to extend the bioelectric effect to traditionally non conducting surfaces of an implanted heart stimulator, like pacemaker or cardioverter-defibrillator (ICD). By making exterior surfaces of the proximal part of the lead and a possible connector top electrically conductive, all exterior stimulator surfaces located within the subcutaneous implant pocket and a part of the lead extending from the pocket are electrically conductive. By adapting these electrically conductive surfaces to form at least two separate electrodes and providing a current source to supply an electric infection control current between these electrodes, all exterior surfaces will be current coated. The bioelectric effect will be extended to all surfaces within the pocket and also to the exterior surface of the proximal part of the

lead. By making the normally nonconducting surfaces of the connector top and the lead electrically conducting not only effective treatment of infections within the pocket is possible, but spreading of the infection from the pocket along the lead is prevented. The lead will in this way benefit from the bioelectric effect and thus it is prevented that bacteria reach the endocardium giving rise to endocarditis. The wear resistance of the lead is improved. The formation of oxide layers that cause uneven current distribution and lower the current due to increased impedance caused by these oxide layers, is avoided. No external source is required and the loading of internal battery is avoided.

DESCRIPTION OF DRAWING(S) - The figure shows a pulse generator housing.

Pulse generator housing (10)
Connector top (12)
Lead (14)
Proximal part (16)
pp; 16 DwgNo 2/4

Title Terms: INFECT; CONTROL; APPARATUS; IMPLANT; HEART; STIMULATING; COMPRISE; PULSE; GENERATOR; DELIVER; ELECTRIC; STIMULATING; PULSE; PATIENT; HEART
Derwent Class: L03; P34; S05
International Patent Class (Main): A61N-001/375
International Patent Class (Additional): A61N-001/05

14/7,DE/10 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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014405585
WPI Acc No: 2002-226288/200228
Defibrillator, using an uncontrolled solid state device automatically undergoing a transition from high to low impedance upon the application of a voltage to provide a compact and inexpensive unit
Patent Assignee: HEARTSINE TECHNOLOGIES INC (HEAR-N); HEARTSINE TECHNOLOGIES LTD (HEAR-N); ALLEN J (ALLE-I); ANDRESON J M (ANDR-I); MCINTYRE A R (MCIN-I)
Inventor: ALLEN J; ANDERSON J M; MCINTYRE A R; ANDRESON J M
Number of Countries: 095 Number of Patents: 008
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200160454	A1	20010823	WO 2001IB439	A	20010213	200228	B
AU 200139484	A	20010827	AU 200139484	A	20010213	200228	
EP 1259291	A1	20021127	EP 2001914105	A	20010213	200302	
			WO 2001IB439	A	20010213		
US 20030023276	A1	20030130	WO 2001IB439	A	20010213	200311	
			US 2002182746	A	20020730		
CN 1404406	A	20030319	CN 2001805255	A	20010213	200344	
JP 2003522614	W	20030729	JP 2001559545	A	20010213	200358	
			WO 2001IB439	A	20010213		
EP 1259291	B1	20030910	EP 2001914105	A	20010213	200360	
			WO 2001IB439	A	20010213		
DE 60100749	E	20031016	DE 600749	A	20010213	200376	
			EP 2001914105	A	20010213		
			WO 2001IB439	A	20010213		

Priority Applications (No Type Date): IE 2000140 A 20000218
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200160454	A1	E	42	A61N-001/39	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP

KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

AU	200139484	A		A61N-001/39	Based on patent WO 200160454
EP	1259291	A1 E		A61N-001/39	Based on patent WO 200160454

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR

US	20030023276	A1		A61N-001/39	
CN	1404406	A		A61N-001/39	
JP	2003522614	W	35	A61N-001/39	Based on patent WO 200160454
EP	1259291	B1 E		A61N-001/39	Based on patent WO 200160454

Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DE	60100749	E		A61N-001/39	Based on patent EP 1259291 Based on patent WO 200160454

Abstract (Basic): WO 200160454 A1

Abstract (Basic):

NOVELTY - A voltage source (60) and an output circuit connect the voltage source across a pair of electrodes (A,B) upon the occurrence of a control signal (64). Each of the current paths between the voltage source and the electrodes contains a solid state switching device.

DETAILED DESCRIPTION - Typically the voltage source is a capacitor charged by a charging circuit (62). One of the current paths contains a breakover USD (USD1(bo)) allowing current to flow from the source to the electrode if the voltage applied from the source is large enough to exceed its threshold. The second current path includes an IGBT, which is turned on by the control signal.

USE - Defibrillator.

ADVANTAGE - Compact and inexpensive unit.

DESCRIPTION OF DRAWING(S) - The drawing shows a circuit diagram of the defibrillator.

Voltage source (60)
Charging circuit (62)
Control signal (64)
Electrodes (A,B)
Switching device (USD1)
pp; 42 DwgNo 6/12

Title Terms: DEFIBRILLATE; UNCONTROLLED; SOLID; STATE; DEVICE; AUTOMATIC; TRANSITION; HIGH; LOW; IMPEDANCE; APPLY; VOLTAGE; COMPACT; INEXPENSIVE; UNIT

Derwent Class: P34; S05; U21; U24

International Patent Class (Main): A61N-001/39

14/7,DE/11 (Item 7 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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013178472

WPI Acc No: 2000-350345/200030

Body-implantable dual transducer transmits sensor signals to control unit using two conductors, when supply voltage of respective polarities is applied to sensors respectively

Patent Assignee: MEDTRONIC INC (MEDT)

Inventor: LEE B B; ROBERTS J P; ROLINE G M

Number of Countries: 022 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200023146	A1	20000427	WO 99US24739	A	19991022	200030	B
US 6163723	A	20001219	US 98177540	A	19981022	200102	
EP 1123132	A1	20010816	EP 99955127	A	19991022	200147	

Priority Applications (No Type Date): US 98177540 A 19981022
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200023146	A1	E	49	A61N-001/365	
	Designated States (National): CA JP				
	Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE				
US 6163723	A			A61N-001/365	
EP 1123132	A1	E		A61N-001/365	Based on patent WO 200023146
	Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE				

Abstract (Basic): WO 200023146 A1
Abstract (Basic):

NOVELTY - Control unit (304) selectively applies supply voltage of positive or negative polarity across two conductors coupled to two sensors (319, 320) which detect two different physiological parameters respectively. Switching circuit (306) provides supply voltage to either sensor in response to supply voltage of respective polarities. Sensor signals are transmitted to control unit using the conductors.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for body-implantable dual transducer control method.

USE - Body-implantable dual transducer is used in various medical devices such as pacemaker/cardioverter/defibrillator (PCD).

ADVANTAGE - Improves assembly and methodology to interconnect and control two physiological sensors using two lead conductors. Reduces power required by sensors that derive power from implantable medical device and increases reliability of medical device employing two sensors.

DESCRIPTION OF DRAWING(S) - The figure shows switching architecture of sensors.

Control unit (304)
Switching circuit (306)
Sensors (319, 320)
pp; 49 DwgNo 4/11

Title Terms: BODY; IMPLANT; DUAL; TRANSDUCER; TRANSMIT; SENSE; SIGNAL; CONTROL; UNIT; TWO; CONDUCTOR; SUPPLY; VOLTAGE; RESPECTIVE; POLARITY; APPLY; SENSE; RESPECTIVE
Derwent Class: P34; S05; T01
International Patent Class (Main): A61N-001/365

14/7,DE/12 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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012600692
WPI Acc No: 1999-406796/199935
Double alkali metal- transition metal oxide cells to power implantable medical device
Patent Assignee: GREATBATCH LTD WILSON (GREW)
Inventor: GAN H; TAKEUCHI E S; CAN H; TAKEUCHI S E
Number of Countries: 028 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 930665	A2	19990721	EP 98309397	A	19981117	199935	B
AU 9892419	A	19990805	AU 9892419	A	19981118	199943	
JP 11283679	A	19991015	JP 995076	A	19990112	200001	
US 6008625	A	19991228	US 988469	A	19980116	200007	
US 6087809	A	20000711	US 988469	A	19980116	200037	
			US 99473160	A	19991228		

AU 748552 B 20020606 AU 9892419 A 19981118 200249

Priority Applications (No Type Date): US 988469 A 19980116; US 99473160 A 19991228
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 930665	A2	E	7	H01M-006/50	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI					
AU 9892419	A			A61N-001/378	
JP 11283679	A		8	H01M-010/44	
US 6008625	A			H02J-007/00	
US 6087809	A			H02J-007/00	Div ex application US 988469 Div ex patent US 6008625
AU 748552	B			A61N-001/378	Previous Publ. patent AU 9892419

Abstract (Basic): EP 930665 A2
Abstract (Basic):
NOVELTY - Two alkali metal-transition metal oxide cells are used for device monitoring and pulse discharge in implantable medical devices. The second cell takes over pulse discharge duty from the first after use and later takes over both monitoring and actuation functions.
DETAILED DESCRIPTION - A cell combination for constant discharge rate during a monitoring function and a current pulse discharge function comprises two electrochemical cell power sources for a load to deliver a constant discharge rate interruptible from time-to-time to deliver a current pulse. A switch initially connects the first cell as the sole power source until it can no longer deliver a pulse, when the second cell is used for the pulse and the first continues to provide power for the monitoring until depleted, when the second cell takes over this function as well.
USE - In cardiac pacemakers and defibrillators, nerve stimulators and drug pumps (claimed)
ADVANTAGE - Discharge efficiency is increased and the double cell can be placed into the existing battery housing.
pp; 7 DwgNo 0/0
Title Terms: DOUBLE; ALKALI; METAL; TRANSITION; METAL; OXIDE; CELL; POWER; IMPLANT; MEDICAL; DEVICE
Derwent Class: L03; P34; S05; X16
International Patent Class (Main): A61N-001/378; H01M-006/50; H01M-010/44; H02J-007/00
International Patent Class (Additional): A61N-001/362; A61N-001/39; H01M-006/16; H01M-006/46; H01M-010/40

14/7,DE/13 (Item 9 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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012253177
WPI Acc No: 1999-059284/199905
Voltage regulator for battery operated implantable medical device - has control circuit to adjust conductance of switching element based on load current delivered at amplifier output terminal to improve frequency response of amplifier
Patent Assignee: CARDIAC PACEMAKERS INC (CARD-N)
Inventor: ARORA S; KELLY D W
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5847551	A	19981208	US 96678965	A	19960712	199905	B
			US 9846850	A	19980324		

Priority Applications (No Type Date): US 96678965 A 19960712; US 9846850 A 19980324
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5847551	A		17	G05F-001/613	Cont of application US 96678965 Cont of patent US 5757167

Abstract (Basic): US 5847551 A

The regulator (220) has an amplifier with two power terminal at two nodes (390,420) which are coupled to each of two power supply nodes (110,140) through the switches (310,320,330,340). Each switching element is a PMOSFET with the gate terminal coupled to a controller circuit (280). The controller circuit regulates the conductance of the switching element for improving the frequency response of the amplifier circuit based on the load current delivered to an amplifier output terminal (190).

USE - For cardiac pacemakers, defibrillators.

ADVANTAGE - Provides stable regulated voltage inspite of appreciable drop-in battery terminal voltage. Improves frequency response characteristics of amplifier circuit.

Dwg.4/9

Title Terms: VOLTAGE; REGULATE; BATTERY; OPERATE; IMPLANT; MEDICAL; DEVICE; CONTROL; CIRCUIT; ADJUST; CONDUCTING; SWITCH; ELEMENT; BASED; LOAD; CURRENT; DELIVER; AMPLIFY; OUTPUT; TERMINAL; IMPROVE; FREQUENCY; RESPOND; AMPLIFY
Derwent Class: S05; U24
International Patent Class (Main): G05F-001/613

14/7,DE/14 (Item 10 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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010128926
WPI Acc No: 1995-030177/199504
Dual battery power system for implantable cardioverter defibrillator - uses two separate battery power sources for defibrillator, each having optimised characteristics for monitoring and for output energy delivery functions respectively
Patent Assignee: ANGEION CORP (ANGE-N)
Inventor: ADAMS T P; BRUMWELL D A; PERTTU J S; SUPINO C G
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5372605	A	19941213	US 92913626	A	19920716	199504 B
			US 93108130	A	19930816	

Priority Applications (No Type Date): US 93108130 A 19930816; US 92913626 A 19920716
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5372605	A		15	A61N-001/39	CIP of application US 92913626 CIP of patent US 5235979

Abstract (Basic): US 5372605 A

The system includes a first battery device for providing electrical power primarily to the monitoring device, a second battery device for providing all of its electrical power to the output device and a backup device for allowing the second battery device to provide electrical power to the monitoring device in the event that the first battery device can no longer provide electrical power to the monitoring device.

The implantable cardioverter defibrillator includes a capacitor device for storing an electrical charge which is charged from the second battery device and wherein the output device selects the appropriate electrical pulse therapy from a set that includes:

one or more cardioversion/defibrillation pulses, each of which are delivered by output device as a capacitive discharge pulse from the capacitor.

ADVANTAGE - Very high reliability, highest possible energy density, extremely low self discharge rate, high current capability without liq and gas venting. Avoids compromises required for single battery system

Dwg.6/7

Title Terms: DUAL; BATTERY; POWER; SYSTEM; IMPLANT; CARDIOVERTER; DEFIBRILLATE; TWO; SEPARATE; BATTERY; POWER; SOURCE; DEFIBRILLATE; OPTIMUM; CHARACTERISTIC; MONITOR; OUTPUT; ENERGY; DELIVER; FUNCTION; RESPECTIVE

Derwent Class: P34; S05; U24; X16

International Patent Class (Main): A61N-001/39

14/7,DE/15 (Item 11 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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009197749

WPI Acc No: 1992-325181/199240

Implanted heart defibrillator using capacitor pulses - has inductance contained in separate housing inserted in one electrode line

Patent Assignee: SIEMENS AG (SIEI); PACESETTER AB (PACE-N); SIEMENS ELEMA AB (SIEI)

Inventor: ANDERSEN H; HIRSCHBERG J; ANDERSON H

Number of Countries: 007 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 505856	A2	19920930	EP 92104391	A	19920313	199240	B
DE 4110404	A	19921001	DE 4110404	A	19910328	199241	
EP 505856	A3	19930107				199345	
US 5312440	A	19940517	US 92856682	A	19920324	199419	
EP 505856	B1	19951206	EP 92104391	A	19920313	199602	
DE 59204533	G	19960118	DE 504533	A	19920313	199608	
			EP 92104391	A	19920313		

Priority Applications (No Type Date): DE 4110404 A 19910328

Cited Patents: No-SR.Pub; US 4834100

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 505856	A2	G	5	A61N-001/39	
Designated States (Regional): DE FR GB IT NL SE					
DE 4110404	A		5	A61N-001/39	
US 5312440	A		5	A61N-001/39	
EP 505856	B1	G	6	A61N-001/39	
Designated States (Regional): DE FR GB IT NL SE					
DE 59204533	G			A61N-001/39	Based on patent EP 505856

Abstract (Basic): EP 505856 A

The defibrillator ha an encapulation housing (2) containing a capacitor (3) which is charged from a voltage source (6) via a controlled switch (5) to supply a defibrillation pulse fed via an inductance (14) and the electrode leads (9, 10) to the heart electrodes (12, 13). The inductance (14) is contained within a separate housing (15) with connections (16, 17) on opposite sides, for insertion in one of the electrode leads (9, 10).

The inductance housing (15) may also contain at least one further passive electrical component, e.g. series resistor.

USE/ADVANTAGE - Implanted heart defibrillator allows defibrillation pulses to be matched for different electrode leads and heart electrodes.

lead

Dwg. 1/3

Abstract (Equivalent): EP 505856 B

Implantable defibrillator arrangement, having arranged in a capsule housing (2) a capacitor (3), which, for charging, can be connected by way of a controllable switching arrangement (5) to a voltage source (6), and for the emission of an electric defibrillation pulse, can be connected by way of said controllable switching arrangement (5), via an inductor (14) and electrode supply lines (9,10), to electrodes (12,13) arranged in the region of the heat (11), characterised in that the inductor (14) is arranged in a second, separate housing (15), which is provided with terminals (16,17) for the insertion of the inductor (14) into the course of one of the electrode supply lines (9).

Dwg.1/3

Abstract (Equivalent): US 5312440 A

The implantable defibrillator arrangement has a housing adapted for in vivo implantation in a patient, the housing containing a capacitor connectable through a controllable switch arrangement to a voltage source for charging, and two electrodes attached in vivo to the heart. An inductance is also provided for assisting in the generation of an electrical defibrillation pulse, the inductance being contained in a second, separate housing provided with terminals for electrically connecting the inductance via leads to the other housing and to one of the electrodes.

The inductance can thus be easily changed, by connecting an inductance in a second housing having an appropriate value, so as to match the defibrillation pulse to different electrode configuration. It is also possible to provide further passive components in the second, separate housing.

ADVANTAGE - Enables simple optimisation of defibrillation pulses.

Dwg.1/3

Title Terms: IMPLANT; HEART; DEFIBRILLATE; CAPACITOR; PULSE; INDUCTANCE; CONTAIN; SEPARATE; HOUSING; INSERT; ONE; ELECTRODE; LINE

Derwent Class: P34; S05

International Patent Class (Main): A61N-001/39

14/7,DE/16 (Item 12 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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004603927

WPI Acc No: 1986-107271/198617

Electro-medical instrument for physiological signals indication - has two housings, one contg. power supply, amplifier, adjusting elements and cable sockets, other contg. matching plugs and visual display

Patent Assignee: ODAM OFF DISTRI APP MEDICAUX (ODAM-N)

Inventor: REITHLER J C

Number of Countries: 002 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 3436945	A	19860417	DE 3436945	A	19841009	198617	B
FR 2571244	A	19860411				198621	
DE 3436945	C	19870129				198704	

Priority Applications (No Type Date): DE 3436945 A 19841009

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 3436945	A		14		

Abstract (Basic): DE 3436945 C

The instrument has the housing (11) for reception of input and output sockets for electrode cable, measurement amplifier, current supply arrangements, adjusting and indicating elements and the like.

The instrument also includes a display screen (13) for the representation of the signals (15), which is part of a miniature component pref. a cathode-ray tube or a liquid crystal element, the miniature element and the screen (13) are separately housed in the screen casing (14).

The screen casing (14) is arranged with plug or screw connections (16) to corresp. with the sockets (17) provided in the housing (11). The display screen casing (14) can also be plugged at a defibrillator-electrode.

USE/ADVANTAGE - As portable instrument for intensive and emergency medical cases, carried in ambulance and like. Provides visible measured physiological signals, within range of person administering treatment without moving appts. (14pp Dwg.No.1/2)

Title Terms: ELECTRO; MEDICAL; INSTRUMENT; PHYSIOLOGICAL; SIGNAL; INDICATE; TWO; HOUSING; ONE; CONTAIN; POWER; SUPPLY; AMPLIFY; ADJUST; ELEMENT; CABLE; SOCKET; CONTAIN; MATCH; PLUG; VISUAL; DISPLAY

Derwent Class: P31; P34; S05

International Patent Class (Additional): A61B-005/04; A61N-001/39

14/7,DE/17 (Item 13 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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001516184

WPI Acc No: 1976-H9118X/197636

Portable defibrillator unit - has electrodes on housings for capacitor, inductance and other electrical components

Patent Assignee: PANTRIDGE J F (PANT-I)

Number of Countries: 003 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
FR 2289166	A	19760702				197636	B
US 4023573	A	19770517				197721	
GB 1481469	A	19770727				197730	

Priority Applications (No Type Date): GB 7446464 A 19741028

Abstract (Basic): FR 2289166 A

The unit incorporates a capacitor charged to a given level by a direct-current source, an inductance, and two electrodes connected to the capacitor by a switch, one via the inductance. Thus the capacitor is discharged via the electrodes through the patient's body, producing an electric shock. The wave form of the electrode discharge voltage has a duration, a peak value and a rate of rise all of predetermined values when the electrodes are connected to a load resistor whose resistance value corresponds to that of a typical patient. The electrodes are each mounted on a different housing and brought into contact with the patient, the charging equipment, capacitor, inductance and all other electrical components being accommodated in or mounted on the housings, so that the unit is fully portable.

Title Terms: PORTABLE; DEFIBRILLATE; UNIT; ELECTRODE; HOUSING; CAPACITOR; INDUCTANCE; ELECTRIC; COMPONENT

Derwent Class: P33; P34; S05

International Patent Class (Additional): A61H-031/00; A61N-001/36

? t s15/7,de/all

15/7,DE/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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6070076 INSPEC Abstract Number: A9823-8630E-002, B9812-8410C-002

Title: Resistance modeling of lithium-silver vanadium oxide batteries
Author(s): Norton, J.D.; Schmidt, C.L.
Author Affiliation: Medtronic Inc., Brooklyn Center, MN, USA
Conference Title: Proceedings of the Symposium on Batteries for Portable Applications and Electric Vehicles p.389-97
Editor(s): Holmes, C.F.; Landgrebe, A.R.
Publisher: Electrochem. Soc, Pennington, NJ, USA
Publication Date: 1997 Country of Publication: USA xiii+996 pp.
ISBN: 1 56677 146 3 Material Identity Number: XX98-02609
Conference Title: Proceedings of the Symposium on Batteries for Portable Applications and Electric Vehicles
Conference Date: 31 Aug.-5 Sept. 1997 Conference Location: Paris, France
Language: English Document Type: Conference Paper (PA)
Treatment: Theoretical (T); Experimental (X)
Abstract: Lithium-silver vanadium oxide (Li/Ag/sub 2/V/sub 4/O/sub 11/ or Li/SVO) primary batteries serve as power sources for implantable medical devices requiring high rates of power delivery, such as implantable cardioverter-defibrillators. By understanding the sources and characteristics of internal battery resistance, batteries and device circuitry can be designed to optimize performance, resulting in battery and device volume reductions. The authors have mapped the internal cell resistance as a function of current density, pulse duration, and depth of discharge. For current densities and pulse lengths short enough to avoid the onset of mass-transfer limitations, resistance is dominated by ohmic components, such as those associated with contact resistances and the electrical resistance of battery components. However, mass-transfer limitations result in rapidly increasing resistance with increasing current density and pulse length. The point at which this transition occurs depends on the extent of discharge of the cell. Maximum battery power capability has similarly been mapped. (14 Refs)
Subfile: A B
Descriptors: contact resistance; current density; electric resistance; electrochemistry; lithium; primary cells; silver compounds; testing; vanadium compounds
Copyright 1998, IEE

15/7,DE/2 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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04656978
E.I. No: EIP97033579318
Title: Lithium/silver vanadium oxide batteries for implantable cardioverter-defibrillators
Author: Skarstad, Paul M.
Corporate Source: Medtronic Promeon Div, Minneapolis, MN, USA
Conference Title: Proceedings of the 1997 12th Annual Battery Conference on Applications and Advances
Conference Location: Long Beach, CA, USA Conference Date: 19970114-19970117
E.I. Conference No.: 46189
Source: Proceedings of the Annual Battery Conference on Applications and Advances 1997.,97TH8226. p 151-155
Publication Year: 1997
CODEN: PBAAE8
Language: English
Document Type: CA; (Conference Article) Treatment: A; (Applications); X ; (Experimental)
Journal Announcement: 9705W2
Abstract: Medtronic has developed a line of lithium/silver vanadium oxide batteries for implantable cardioverter-defibrillators. Unique features of

the system are described, and improvements in mechanical packaging efficiency are presented. (Author abstract) 16 Refs.
Descriptors: *Secondary batteries; Defibrillators; Electric power supplies to apparatus; Anodes; Cathodes; Oxides; Design; Efficiency

15/7,DE/3 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015833259
WPI Acc No: 2003-895463/200382
Electrochemical cell, e.g. secondary electrochemical cell for battery, has electrolyte that activates and operatively associating anode electrode and cathode electrode to provide sources of electrical energy
Patent Assignee: GREATBATCH LTD WILSON (GREW)
Inventor: SPILLMAN D M; TAKEUCHI E S
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6623884	B1	20030923	US 2000633408	A	20000807	200382	B

Priority Applications (No Type Date): US 2000633408 A 20000807
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6623884	B1		9	H01M-004/00	

Abstract (Basic): US 6623884 B1
Abstract (Basic):
NOVELTY - An electrochemical cell (10) comprises an electrolyte activating and operatively associating an anode electrode and cathode electrode such that first and second regions are dischargeable independent of each other to provide separate and independent sources of electrical energy.
DETAILED DESCRIPTION - An electrochemical cell comprises an anode electrode of an anode material capable of intercalation and de-intercalation of lithium; cathode electrode electrically associated with the anode electrode to provide a first region and a second region of the cell, where the first and second regions comprise respective first and second lithium-retention materials; and an electrolyte activating and operatively associating the anode electrode and the cathode electrode such that the first and second regions are dischargeable independent of each other to provide separate and independent sources of electrical energy. A first capacity ratio and a second capacity ratio of the anode material to the respective first and second lithium-retention materials is at least1:1. An INDEPENDENT CLAIM is also included for a method for providing a secondary electrochemical cell comprising providing a casing of electrically conductive material; housing a first electrochemical cell within the casing by providing an anode comprising a carbonaceous material electrically connected to an anode current collector; and providing a first cathode of a first lithium-retention material electrically connected to a first cathode current collector, where the first cathode is electrically associated with the anode and comprises a first cathode plate(s) having first and second major surfaces extending to and meeting with spaced apart sides meeting spaced apart ends joined to the sides to provide the first cathode plate having a thickness between the first and second major surfaces defined by widths of the spaced apart sides and widths of the spaced apart ends; housing a second electrochemical cell within the casing by providing a second cathode of a second lithium-retention material electrically connected to a second cathode current collector; and electrically associating the second cathode with a second portion of the anode not already associated with the first cathode; and

activating the first and second electrochemical cells with an electrolyte solution.

USE - The electrochemical cell, e.g. secondary electrochemical cell is used for battery e.g. for cardiac defibrillators.

ADVANTAGE - The invented electrochemical cell has medium rate, constant discharge or constant drain region and a high rate, pulse discharge region provided with the same secondary electrochemical cell.

DESCRIPTION OF DRAWING(S) - The figure is a diagrammatic view of a secondary electrochemical cell.

Electrochemical cell (10)
Medium rate region (12)
High rate region (14)
Anode sheet (28)
Cathode plates (30, 32)
pp; 9 DwgNo 1/2

Title Terms: ELECTROCHEMICAL; CELL; SECONDARY; ELECTROCHEMICAL; CELL; BATTERY; ELECTROLYTIC; ACTIVATE; OPERATE; ASSOCIATE; ANODE; ELECTRODE; CATHODE; ELECTRODE; SOURCE; ELECTRIC; ENERGY
Derwent Class: L03; S05; X16
International Patent Class (Main): H01M-004/00

15/7,DE/4 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015714713
WPI Acc No: 2003-776913/200373
Power supply for pacemaker, has secondary flexible coil receiving power from primary coil and transmitting it to medical device
Patent Assignee: AHN T Y (AHNT-I); KIM B J (KIMB-I); MOON C I (MOON-I)
Inventor: AHN T Y; KIM B J; MOON C I
Number of Countries: 095 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20020177884	A1	20021128	US 2001949612	A	20010912	200373 B
KR 2002089605	A	20021130	KR 200128347	A	20010523	200373
WO 200294139	A1	20021128	WO 2001KR1508	A	20010906	200373
EP 1389079	A1	20040218	EP 2001965729	A	20010906	200413
			WO 2001KR1508	A	20010906	

Priority Applications (No Type Date): KR 200128347 A 20010523
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020177884	A1		18	A61N-001/378	
KR 2002089605	A			A61F-002/48	
WO 200294139	A1	E		A61F-002/48	

Designated States (National): AE AG AL AM AU AZ BA BB BG BR BY BZ CA CN CO CR CU CZ DM DZ EC EE GD GE GH GM HR HU ID IL IN IS JP KE KG KP KZ LC LK LR LS LT LV MA MD MG MK MN MW MX MZ NO NZ PH PL RO RU SD SG SI SK SL TJ TM TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

EP 1389079	A1	E		A61F-002/48	Based on patent WO 200294139

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR

Abstract (Basic): US 20020177884 A1
Abstract (Basic):

NOVELTY - A flat primary coil (530) transmits power in the form of magnetic flux to a secondary coil (535). A secondary flexible coil transmits the received power to an implantable medical device (560).

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for implantable medical device.

USE - For implantable medical device (claimed) e.g. pacemaker, implantable cardioverter defibrillator, neurostimulator, GI stimulator, implantable drug infusion pump, bone growth stimulation device.

ADVANTAGE - Transmits power to the secondary flexible coil efficiently, and hence avoids the need of surgical operation for charging the battery.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic diagram of the power supply.

primary coil (530)
secondary coil (535)
diodes (542,544,546,548)
medical device (560)
pp; 18 DwgNo 5A/10

Title Terms: POWER; SUPPLY; PACEMAKER; SECONDARY; FLEXIBLE; COIL; RECEIVE; POWER; PRIMARY; COIL; TRANSMIT; MEDICAL; DEVICE
Derwent Class: P32; P34; S05; U24; V02; X16
International Patent Class (Main): A61F-002/48; A61N-001/378

15/7,DE/5 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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014397478
WPI Acc No: 2002-218181/200228
Appliance and method for facilitating direct scan of information and identification of implanted medicinal device with discharged power source with back-up power supply charged by RF telemetry
Patent Assignee: MEDTRONIC INC (MEDT)
Inventor: FORSBERG J W; GREVIOUS J J; JENSEN S L; LEINDERS R; MCMULLEN R F; TORGERSON N A
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 10117241	A1	20011115	DE 1017241	A	20010406	200228 B
US 6456883	B1	20020924	US 2000558664	A	20000426	200266

Priority Applications (No Type Date): US 2000558664 A 20000426
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 10117241	A1		20	A61N-001/08	
US 6456883	B1			A61N-001/378	

Abstract (Basic): DE 10117241 A1
Abstract (Basic):

NOVELTY - The appliance is fitted with an RF aerial (15). An external programmer (1) transmits power, using RF telemetry, to the aerial. This is rectified by an internal bridge connected rectifier (20) to charge a capacitor (25) which forms a back-up power supply to the discharged main battery

USE - For pacemakers, defibrillators, drug dosing devices and similar implanted medical systems

ADVANTAGE - Enables stored information and type of equipment to be scanned within milliseconds when device ceases to function due to loss of power. Also enables external programmer to determine if the main power source is rechargeable and to recharge it through the RF link

DESCRIPTION OF DRAWING(S) - The figure shows a block diagram for an appliance to the present invention. (Drawing includes non-English language text)

programmer (1)
RF aerial (15)

rectifier (20)
capacitor (25)
pp; 20 DwgNo 4/6
Title Terms: APPLIANCE; METHOD; FACILITATE; DIRECT; SCAN; INFORMATION; IDENTIFY; IMPLANT; MEDICINE; DEVICE; DISCHARGE; POWER; SOURCE; BACK; UP; POWER; SUPPLY; CHARGE; RF; TELEMETRY
Derwent Class: P34; S05; W05
International Patent Class (Main): A61N-001/08; A61N-001/378
International Patent Class (Additional): A61N-001/372

15/7,DE/6 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013727806
WPI Acc No: 2001-212036/200122
System for electrophoretic delivery of therapeutic substance to internal bodily tissues, includes electrode with insulation, biocompatible matrix and second electrode
Patent Assignee: MEDTRONIC INC (MEDT)
Inventor: DONOVAN M G; ELDE N; PADUA R; SOYKAN O
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 10032000	A1	20010125	DE 1032000	A	20000630	200122	B

Priority Applications (No Type Date): US 99346084 A 19990701
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 10032000	A1		32	A61M-029/00	

Abstract (Basic): DE 10032000 A1
Abstract (Basic):
NOVELTY - An implantable delivery structure, comprising a first electrode with insulating layer, a biocompatible matrix overlying the insulating layer and a second electrode, is new.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for making a medicinal electrical lead.
USE - For electrophoretic delivery of therapeutic substance to internal bodily tissues. The system may also be provided with heart stimulation and/or defibrillation circuits.
ADVANTAGE - The system improves the control of rate and quantity of delivery at the target site. It reduces problems of delivery other than by existing bodily penetrations, delivery at or near electrosensitive tissues, e.g. cardiovascular tissue, including heart tissues and myocardial tissues.
DESCRIPTION OF DRAWING(S) - The drawing shows an epicardial cardio-defibrillator and system of leads with three independently-positionable electrodes.
Biocompatible matrix (20)
Therapeutic substance (22)
Leads (32, 34, 36)
Electrodes (40, 42, 44).
pp; 32 DwgNo 1/12
Title Terms: SYSTEM; ELECTROPHORESIS; DELIVER; THERAPEUTIC; SUBSTANCE; INTERNAL; BODY; TISSUE; ELECTRODE; INSULATE; BIOCOMPATIBLE; MATRIX; SECOND; ELECTRODE
Derwent Class: A11; A14; A25; A26; A96; B07; D16; D22; P34; S05
International Patent Class (Main): A61M-029/00
International Patent Class (Additional): A61L-027/14; A61M-031/00

15/7,DE/7 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013229388
WPI Acc No: 2000-401262/200035
Implantable medical apparatus useful as energy-saving device, contains one or more functional analogue and digital circuits
Patent Assignee: MEDTRONIC INC (MEDT)
Inventor: THOMPSON D L
Number of Countries: 003 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 19951488	A1	20000525	DE 1051488	A	19991026	200035	B
US 6091987	A	20000718	US 9867881	A	19980429	200037	
			US 98181459	A	19981028		
FR 2788898	A1	20000728	FR 9913364	A	19991026	200040	

Priority Applications (No Type Date): US 98181459 A 19981028; US 9867881 A 19980429
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 19951488	A1		29	A61N-001/378	
US 6091987	A			A61N-001/00	CIP of application US 9867881
FR 2788898	A1			H02J-007/00	

Abstract (Basic): DE 19951488 A1
Abstract (Basic):
NOVELTY - An implantable medical apparatus (I), is new and contains one or more functional analogue and digital circuits with a fixed voltage power source. A voltage-generating circuit is connected to the source, producing further, higher fixed supply voltage(s) applied to one or more analog circuits.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a method (II) of power saving, during supply to a medical device.
USE - (I) is useful as an implantable medical device (claimed). (II) is a power-saving method for supplying medical devices (claimed), especially implantable devices, with voltages for digital and analog circuitry, whilst reducing power consumption and prolonging source life.
ADVANTAGE - Reduced power consumption by use of minimal voltage supply for digital circuits, increased circuit life, especially when implanted, reduction of size, minimal standing current and power consumption are all achieved using (I).
pp; 29 DwgNo 0/14
Title Terms: IMPLANT; MEDICAL; APPARATUS; USEFUL; ENERGY; SAVE; DEVICE; CONTAIN; ONE; MORE; FUNCTION; ANALOGUE; DIGITAL; CIRCUIT
Derwent Class: B07; P31; P34; S05; U24
International Patent Class (Main): A61N-001/00; A61N-001/378; H02J-007/00
International Patent Class (Additional): A61B-005/04; A61N-001/08; G05F-001/66; H02M-003/07

15/7,DE/8 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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011904879
WPI Acc No: 1998-321789/199828
Voltage regulator in semiconductor power supply circuit for battery powered implantable medical device e.g cardiac pacemaker, defibrillator - has control circuit to regulate operation of first and second switches such that amplifier is capable of receiving power from first and second

power supplies
Patent Assignee: CARDIAC PACEMAKERS INC (CARD-N)
Inventor: ARORA S; KELLY D W
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5757167	A	19980526	US 96678965	A	19960712	199828	B

Priority Applications (No Type Date): US 96678965 A 19960712
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5757167	A		17	G05F-001/613	

Abstract (Basic): US 5757167 A
The regulator has an amplifier (270) equipped with a first amplifier power terminal. A first power supply is connected to the first amplifier power terminal via a first switch (310). A second power supply is connected to the second amplifier power terminal via a second switch (320).
A control circuit (280) regulates the operation of the first and the second switches such that the amplifier is capable of receiving power from the first and the second power supplies.
ADVANTAGE - Provides stable voltage without any noise. Operates over wide range of output load currents.
Dwg.4/9
Title Terms: VOLTAGE; REGULATE; SEMICONDUCTOR; POWER; SUPPLY; CIRCUIT; BATTERY; POWER; IMPLANT; MEDICAL; DEVICE; CARDIAC; PACEMAKER; DEFIBRILLATE; CONTROL; CIRCUIT; REGULATE; OPERATE; FIRST; SECOND; SWITCH; AMPLIFY; CAPABLE; RECEIVE; POWER; FIRST; SECOND; POWER; SUPPLY
Derwent Class: S05; U21; U24
International Patent Class (Main): G05F-001/613

15/7,DE/9 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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011320455
WPI Acc No: 1997-298359/199727
Electrical connectors for medical defibrillator apparatus - comprises first mating connector coupling with second connector, housed within enclosure, optionally containing illuminating light source
Patent Assignee: HEARTSTREAM INC (HEAR-N); AGILANT TECHNOLOGIES INC (AGIL-N); AGILENT TECHNOLOGIES INC (AGIL-N)
Inventor: GREENSTEIN A
Number of Countries: 022 Number of Patents: 012
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9719494	A1	19970529	WO 96US18687	A	19961118	199727	B
AU 9711215	A	19970611	AU 9711215	A	19961118	199740	
NO 9802283	A	19980624	WO 96US18687	A	19961118	199835	
			NO 982283	A	19980519		
EP 862800	A1	19980909	EP 96942030	A	19961118	199840	
			WO 96US18687	A	19961118		
US 5967817	A	19991019	US 95561527	A	19951121	199950	
EP 862800	B1	20000202	EP 96942030	A	19961118	200011	
			WO 96US18687	A	19961118		
JP 2000500611	W	20000118	WO 96US18687	A	19961118	200014	
			JP 97519892	A	19961118		
DE 69606550	E	20000309	DE 606550	A	19961118	200019	
			EP 96942030	A	19961118		
			WO 96US18687	A	19961118		
US 6048218	A	20000411	US 95561527	A	19951121	200025	

			US 99281709	A	19990330		
US 6234816	B1	20010522	US 99281709	A	19990330	200130	N
			US 2000487734	A	20000119		
US 6244882	B1	20010612	US 95561527	A	19951121	200135	
			US 99281709	A	19990330		
			US 2000489639	A	20000124		
US 6319031	B1	20011120	US 95561527	A	19951121	200174	
			US 99281709	A	19990330		
			US 2000489638	A	20000124		

Priority Applications (No Type Date): US 95561527 A 19951121; US 99281709 A 19990330; US 2000487734 A 20000119; US 2000489639 A 20000124; US 2000489638 A 20000124
Cited Patents: EP 52879; US 3382355; US 4671597
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9719494	A1	E	28	H01R-013/52	
Designated States (National): AU CA JP NO					
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
AU 9711215	A				Based on patent WO 9719494
NO 9802283	A			H01R-013/52	
EP 862800	A1	E			Based on patent WO 9719494
Designated States (Regional): DE GB					
US 5967817	A			H01R-004/60	
EP 862800	B1	E			Based on patent WO 9719494
Designated States (Regional): DE GB					
JP 2000500611	W		34	H01R-013/533	Based on patent WO 9719494
DE 69606550	E			H01R-013/52	Based on patent EP 862800
					Based on patent WO 9719494
US 6048218	A			H01R-004/60	Cont of application US 95561527
US 6234816	B1			H01R-004/60	Cont of application US 99281709
US 6244882	B1			H01R-004/60	Cont of application US 95561527
					Cont of application US 99281709
					Cont of patent US 5967817
					Cont of patent US 6048218
US 6319031	B1			H01R-004/60	Cont of application US 95561527
					Cont of application US 99281709
					Cont of patent US 5967817
					Cont of patent US 6048218

Abstract (Basic): WO 9719494 A

A medical connecting apparatus for an electrical supply comprises first and second conductive mating parts, the second part being located within an open-ended enclosure (115). When the first part (105) is inserted into the second part enclosure, a wiping action cleans the respective contact areas, ensuring good connections. Environmental residue thus released is expelled through a further opening in the second part enclosure.

In an alternative embodiment, the second part enclosure contains an illuminating light source, which becomes covered with a portion of the first connector when the assembly is mated together.

USE/ADVANTAGE - Electrical connectors facilitating use of all types of defibrillation apparatus, particularly when operated by non-medical personnel, enabling fast response time delivery of defibrillation shock to patient in cardiac arrest emergency.

Dwg.1/11

Abstract (Equivalent): EP 862800 B

A medical connecting apparatus for an electrical supply comprises first and second conductive mating parts, the second part being located within an open-ended enclosure (115). When the first part (105) is inserted into the second part enclosure, a wiping action cleans the respective contact areas, ensuring good connections. Environmental

residue thus released is expelled through a further opening in the second part enclosure.

In an alternative embodiment, the second part enclosure contains an illuminating light source, which becomes covered with a portion of the first connector when the assembly is mated together.

USE/ADVANTAGE - Electrical connectors facilitating use of all types of defibrillation apparatus, particularly when operated by non-medical personnel, enabling fast response time delivery of defibrillation shock to patient in cardiac arrest emergency.

Abstract (Equivalent): US 6048218 A

A medical connecting apparatus for an electrical supply comprises first and second conductive mating parts, the second part being located within an open-ended enclosure (115). When the first part (105) is inserted into the second part enclosure, a wiping action cleans the respective contact areas, ensuring good connections. Environmental residue thus released is expelled through a further opening in the second part enclosure.

In an alternative embodiment, the second part enclosure contains an illuminating light source, which becomes covered with a portion of the first connector when the assembly is mated together.

USE/ADVANTAGE - Electrical connectors facilitating use of all types of defibrillation apparatus, particularly when operated by non-medical personnel, enabling fast response time delivery of defibrillation shock to patient in cardiac arrest emergency.

US 5967817 A

A medical connecting apparatus for an electrical supply comprises first and second conductive mating parts, the second part being located within an open-ended enclosure (115). When the first part (105) is inserted into the second part enclosure, a wiping action cleans the respective contact areas, ensuring good connections. Environmental residue thus released is expelled through a further opening in the second part enclosure.

In an alternative embodiment, the second part enclosure contains an illuminating light source, which becomes covered with a portion of the first connector when the assembly is mated together.

USE/ADVANTAGE - Electrical connectors facilitating use of all types of defibrillation apparatus, particularly when operated by non-medical personnel, enabling fast response time delivery of defibrillation shock to patient in cardiac arrest emergency.

Title Terms: ELECTRIC; CONNECT; MEDICAL; DEFIBRILLATE; APPARATUS; COMPRISE; FIRST; MATE; CONNECT; COUPLE; SECOND; CONNECT; HOUSE; ENCLOSE; OPTION; CONTAIN; ILLUMINATE; LIGHT; SOURCE

Derwent Class: P34; S05; V04

International Patent Class (Main): H01R-004/60; H01R-013/52; H01R-013/533

International Patent Class (Additional): A61N-001/39

15/7,DE/10 (Item 8 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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011130843

WPI Acc No: 1997-108767/199710

Portable defribrillator with disposable power pack - has detection circuit to provide signal representative of heart activity which drives treatment electrode delivering discharge to patient.

Patent Assignee: AUTOMATIC DEFIBRILLATOR INC (AUTO-N)

Inventor: LAMOND P; STRUL B; LAMOND P R

Number of Countries: 071 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9702068	A1	19970123	WO 96US11259	A	19960702	199710	B
AU 9664511	A	19970205	AU 9664511	A	19960702	199721	

US 5658316 A 19970819 US 95497738 A 19950703 199739

Priority Applications (No Type Date): US 95497738 A 19950703
Cited Patents: EP 409591; EP 627241; EP 686407; US 4610254; US 5314451; US 5391187; US 5411538; US 5470343; WO 9116104; WO 9219319; WO 9321989; WO 9422530
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9702068	A1	E	25	B	
AU 9664511	A			B	Based on patent WO 9702068
US 5658316	A		11	B	

Designated States (National): AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN
Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG

Abstract (Basic): WO 9702068 A

A defribrillator [10] includes a housing [12] including a power pack and a main electronic unit with an electrocardiogram (ECG) detection unit for providing a control signal representative of heart activity. The power pack includes a removable insulator to provide coupling of the power pack to the main electronic unit. The defibrillator includes an ECG electrode [18] and a treatment electrode [14] and a ground pad electrode both of which are coupled to the power pack which includes non- rechargeable batteries. A defibrillation circuit, which is includes as a part of the main electronic unit, is responsive to the control signal to deliver a discharge to the treatment electrode.

ADVANTAGE - Safe, easy to operate, low cost defibrillator with non-rechargeable battery pack and memory to reduce loss of archival information.

Dwg.2a/4

Abstract (Equivalent): US 5658316 A

A portable defibrillator device, comprising:

a housing including a disposable power pack and a main electronic unit with an ECG detection circuit that provides a control signal representative of heart activity, wherein the power pack includes an insulator member configured to be removed from the power pack to provide a coupling of the power pack to the main electronic unit;

a treatment electrode coupled to the power pack and the main electronic unit;

a ground pad electrode coupled to the power pack and the main electronic unit;

an ECG electrode coupled to the ECG detection circuit;

one or more non-rechargeable batteries positioned in the power pack, each battery including battery contacts; and

a defibrillation circuit responsive to the control signal and configured to deliver a discharge to the treatment electrode, wherein the defibrillation circuit is included as at least a part of the main electronic unit.

Dwg.1/4

Title Terms: PORTABLE; DISPOSABLE; POWER; PACK; DETECT; CIRCUIT; SIGNAL; REPRESENT; HEART; ACTIVE; DRIVE; TREAT; ELECTRODE; DELIVER; DISCHARGE; PATIENT
Derwent Class: P34; S05; U24
International Patent Class (Main): A61N-001/378; A61N-001/39

15/7,DE/11 (Item 9 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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010865531
WPI Acc No: 1996-362482/199636
Staged energy storage system for implantable defibrillator - selectively discharges current in second stage energy concentration unit e.g rechargeable battery, to transformer as short term, low-voltage, high current discharge
Patent Assignee: ANGEION CORP (ANGE-N); KROLL M W (KROL-I)
Inventor: BRUMWELL D A; DONOHOO A M; KROLL M W
Number of Countries: 019 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9622811	A1	19960801	WO 96US763	A	19960119	199636 B
EP 751805	A1	19970108	EP 96903577	A	19960119	199707
			WO 96US763	A	19960119	
US 5620464	A	19970415	US 92993094	A	19921218	199721
			US 92993292	A	19921218	
			US 95376353	A	19950123	
US 5674248	A	19971007	US 95377375	A	19950123	199746
			US 95486760	A	19950607	
US 5836973	A	19981117	US 9293292	A	19921218	199902
			US 92993094	A	19921218	
			US 93126044	A	19930923	
			US 95486760	A	19950607	
			US 96745724	A	19961112	

Priority Applications (No Type Date): US 95486760 A 19950607; US 95376353 A 19950123; US 95377375 A 19950123; US 92993094 A 19921218; US 92993292 A 19921218; US 9293292 A 19921218; US 93126044 A 19930923; US 96745724 A 19961112
Cited Patents: US 5383907; US 5405363; US 5407444
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9622811	A1	E	28	A61N-001/39	
Designated States (National): CA JP US					
Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE					
EP 751805	A1	E	28		Based on patent WO 9622811
Designated States (Regional): DE FR GB NL					
US 5620464	A		10		CIP of application US 92993094
					CIP of application US 92993292
					CIP of patent US 5383907
					CIP of patent US 5407444
US 5674248	A		11		CIP of application US 95377375
US 5836973	A			A61N-001/39	CIP of application US 9293292
					CIP of application US 92993094
					CIP of application US 93126044
					Cont of application US 95486760
					CIP of patent US 5383907
					CIP of patent US 5407444
					CIP of patent US 5439482
					Cont of patent US 5674248

Abstract (Basic): WO 9622811 A
The energy storage system (40) provides electrical energy to an implantable defibrillator by using a combination of a first stage energy source (45), and a second energy concentration system (50). The second stage energy concentration system (50) allows for either a lower density and/or lower voltage energy source to be used as the first stage energy source (45). The concentration system (50) may comprise of a rechargeable battery or a high density capacitor system.
The rechargeable battery system pref includes a rechargeable defibrillator battery (50) that is maintained fully charged by the pacing battery (45). The rechargeable defibrillator battery (50) is

used to drive the primary (21) of the high voltage transformer, or similar power transfer component, through a switch (18).

USE/ADVANTAGE - Energy storage for cardioverter or defibrillator. Reduced battery size, weight and cost, and allows multiple closely spaced countershock pulses to be delivered.

Dwg.2/7

Abstract (Equivalent): US 5674248 A

A staged energy storage system for providing low voltage energy to an implantable biomedical device comprising:

a first stage energy source means for providing a long-term, low-voltage, low-current source of an electrical current of less than 10 milliamperes;

a second stage energy concentration means comprising a capacitor system for storing the electrical current delivered from the first stage energy source means; and

switch means electrically connected to the second stage energy concentration means and to at least two implanted electrodes for selectively discharging the electrical current in the second stage energy concentration means through the at least two implanted electrodes as at least one short-term, low-voltage, high-current discharge of greater than 0.5 A,

wherein the first stage energy source means is capable of delivering at least 1 joule/second and the second stage energy concentration means stores at least 15 J and wherein the first stage energy source means, the second stage energy concentration means and the switch means for selectively discharging are all contained within the implantable biomedical device.

Dwg.5/5

US 5620464 A

A main energy delivery electrical circuit for use in an implantable cardioverter defibrillator device, comprising:

a) a low power output primary defibrillator battery;

b) a high power output intermediate power intensifying capacitor system;

c) switch means, electrically connected to the intensifying capacitor system and the primary defibrillator battery, for selectively switching between the primary defibrillator battery and the intensifying capacitor system;

d) a high voltage transformer system electrically connected to the switch means; and

a main energy delivery capacitor system connected to the transformer system for storing, in a first pulse to be discharged, an electrical charge from the primary defibrillator battery and for storing, as at least one subsequent pulse to be discharged, an electrical charge derived from the intensifying capacitor system,

such that the electrical circuit permits the implantable cardioverter defibrillator device to deliver multiple closely spaced defibrillation pulses to a heart.

Dwg.5/6

Title Terms: STAGE; ENERGY; STORAGE; SYSTEM; IMPLANT; DEFIBRILLATE; SELECT; DISCHARGE; CURRENT; SECOND; STAGE; ENERGY; CONCENTRATE; UNIT; RECHARGE; BATTERY; TRANSFORMER; SHORT; TERM; LOW; VOLTAGE; HIGH; CURRENT; DISCHARGE

Derwent Class: P34; S05; U24; X16

International Patent Class (Main): A61N-001/39

15/7,DE/12 (Item 10 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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010363803

WPI Acc No: 1995-265116/199535

Battery charging and selecting system for emergency medical devices e.g

portable defibrillators - controls use of pair of batteries for powering portable device according to battery condition and similarly recharging of batteries

Patent Assignee: SPACELABS MEDICAL INC (SPAC-N); PHYSIO-CONTROL CORP (PHYS-N); PHYSIO CONTROL CORP (PHYS-N)

Inventor: KOU A H; WILEY R A

Number of Countries: 008 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 665627	A2	19950802	EP 95100978	A	19950125	199535 B
CA 2140993	A	19950727	CA 2140993	A	19950124	199542
EP 665627	A3	19950920	EP 95100978	A	19950125	199615
US 5640078	A	19970617	US 94188240	A	19940126	199730
EP 665627	B1	19990908	EP 95100978	A	19950125	199941
DE 69511912	E	19991014	DE 611912	A	19950125	199949
			EP 95100978	A	19950125	

Priority Applications (No Type Date): US 94188240 A 19940126

Cited Patents: -SR.Pub; DE 3926655; EP 420645; EP 463593; GB 2242794; US 5122722; US 5264777; WO 9015466

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 665627	A2	E	30	H02J-007/10	
Designated States (Regional): CH DE FR GB IT LI					
US 5640078	A		25	H02J-007/00	
EP 665627	B1	E		H02J-007/10	
Designated States (Regional): CH DE FR GB IT LI					
DE 69511912	E			H02J-007/10	Based on patent EP 665627
CA 2140993	A			H02J-007/10	
EP 665627	A3			H02J-007/10	

Abstract (Basic): EP 665627 A

The system has a battery selecting circuit (110) and a battery charging circuit (112) both connected to a microprocessor (102). A filter (20) and a rectifier (122) are coupled in series between a voltage supply and the charging circuit so that either an AC or DC voltage may be used to recharge the batteries. The microprocessor selects one or both of a pair of batteries to power the portable unit (101) according to the battery voltages.

When a selected battery is expended the microprocessor selects an alternative battery. When the device is powered down the microprocessor selects a high charge rate for application to the battery with the highest terminal voltage and then directs the second battery to be charged at the higher rate whilst the other is charged at a lower rate.

ADVANTAGE - Enhances the reliability of the power supply.

Dwg.1/15

Abstract (Equivalent): US 5640078 A

A battery charging and selecting system coupled to a terminal of a voltage supply for charging at least first and second batteries and for selecting at least one of at least first and second batteries to deliver power to an electrical component, the first and second batteries having respective first and second voltages, the system comprising:

a battery charger coupled to the terminal of the voltage supply and selectively coupled to the first and second batteries, the battery charger selectively providing a first mount of current to the first and second batteries;

a battery selector for selectively coupling the first and second batteries to the electrical component, the battery selector having a first state that couples at least one of the first and second batteries to the electrical component to supply power thereto and a second state that uncouples both of the first and second batteries from the electrical component;

a battery voltage monitoring circuit coupled to the first and second batteries and outputting first and second voltage signals representing the first and second voltages, respectively; and

a control circuit coupled to the battery charger, the battery selector and the battery voltage monitoring circuit, the control circuit determining in which state the battery selector is, and, if the battery selector is in the first state, then the control circuit

(i) directs the battery selector to couple the first battery to the electrical component,

(ii) compares the first voltage signal to a threshold voltage value,

(iii) directs the battery selector to couple the second battery to the electrical component when the first voltage signal is less than the threshold voltage value,

(iv) compares the second voltage signal to the threshold voltage value, and

(v) directs the battery selector to couple both of the first and second batteries to the electrical component when the second voltage signal is less than the threshold voltage value, and if the battery selector is in the second state, the control circuit then

(i) compares the first and second voltage signals before the battery charger provides the first amount of current to either one of the first and second batteries,

(ii) determines that the first voltage signal corresponding to the first voltage on the first battery is greater than the second voltage signal corresponding to the second voltage on the second battery,

(iii) causes the battery charger to provide the first amount of current to the first battery, and

(iv) thereafter causes the battery charger to provide the first amount of current to the second battery.

Dwg.1,5/15

Title Terms: BATTERY; CHARGE; SELECT; SYSTEM; EMERGENCY; MEDICAL; DEVICE; PORTABLE; DEFIBRILLATE; CONTROL; PAIR; BATTERY; POWER; PORTABLE; DEVICE; ACCORD; BATTERY; CONDITION; SIMILAR; RECHARGE; BATTERY

Derwent Class: S05; X16

International Patent Class (Main): H02J-007/00; H02J-007/10

International Patent Class (Additional): H01M-010/44

15/7,DE/13 (Item 11 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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010247214

WPI Acc No: 1995-148469/199520

Implantable cardiac defibrillator with multiphase shock generator - has electrodes connected to stimulating circuit and control circuit supplied by battery while shock generator with capacitors is controlled by electronic switches

Patent Assignee: ELA MEDICAL SA (ELAM-N)

Inventor: JACOBSON P; KROISS D; OSTROFF A

Number of Countries: 010 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 648514	A1	19950419	EP 94402223	A	19941005	199520	B
FR 2711064	A1	19950421	FR 9312265	A	19931015	199521	
US 5545181	A	19960813	US 94320854	A	19941011	199638	
EP 648514	B1	20020123	EP 94402223	A	19941005	200207	
DE 69429703	E	20020314	DE 629703	A	19941005	200226	
			EP 94402223	A	19941005		

Priority Applications (No Type Date): FR 9312265 A 19931015

Cited Patents: EP 326290; EP 515059; EP 540266; EP 547878; EP 551746; EP

553863; EP 553864; US 4800883; US 4998531; US 5224476

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 648514	A1	F	10	A61N-001/39	
Designated States (Regional): BE CH DE ES FR GB IT LI SE					
FR 2711064	A1			A61N-001/39	
US 5545181	A		8	A61N-001/39	
EP 648514	B1	F		A61N-001/39	
Designated States (Regional): BE CH DE ES FR GB IT LI SE					
DE 69429703	E			A61N-001/39	Based on patent EP 648514

Abstract (Basic): EP 648514 A

The defibrillator includes two electrodes (4,5) connected to a stimulating circuit (3) controlled by a circuit (2) and supplied by a battery (1). A shock generator (6) supplied by the same battery includes two capacitors (7A,B) connected to electronic switches (8-11) in a bridge configuration (32).

The switches connect the capacitors to a resistor (12) placed between the terminals (13,14) of the two electrodes. The electronic switches include MOSFETs connected in series with diodes which allow current flow in one direction only.

ADVANTAGE - Has simplified supply and control circuits which can operate over range of negative voltages. Is power supplied by battery in unique polarisation configuration.

Dwg.1/1

Abstract (Equivalent): US 5545181 A

A multiphasic defibrillator shock generator for an implantable device, comprising:

a battery to supply energy, having a positive and a negative terminal;

control circuits having a supply input and output control signals to control pacing and shock events;

a pace circuit to provide pacing pulses to the heart in response to a first output control signal, the pace circuit having a supply input;

a shock charging circuit coupled to the battery and operable to convert battery energy to shock energy, the shock charging circuit having an output;

a capacitor coupled to the shock charging circuit output to store shock energy, having a positive terminal and a negative terminal;

two high side electronic switches and two low side electronic switches connected in an H-bridge switch configuration, the H-bridge switch being coupled to said capacitor to connect said capacitor with selective polarity to a load, the H-bridge switch configuration having a positive terminal coupled to the capacitor positive terminal, a negative terminal coupled to the capacitor negative terminal, and two shock electrodes located respectively between the high and low side switches;

two isolated high side drivers selectively operating each high side switch in response to a corresponding output control signal from said control circuits;

two low side drivers for selectively operating each low side switch in response to a corresponding output control signal from said control circuits; and

a circuit supplying power from said battery to said control circuit, pace circuit, and low side drivers, wherein the improvement comprises:

a connection from the positive terminal of said battery to a ground;

first means for deriving a first negative supply voltage, the first negative supply being input to said control circuit supply input wherein said control circuit operates between said first negative supply voltage and ground;

second means for deriving a second negative supply voltage, the

second negative supply being input to said pace circuit supply input wherein said pace circuit operates between said second supply voltage and ground;

third means for deriving a third negative supply voltage, the third negative supply voltage being input to the low side drivers input wherein said low side drivers operate between said third negative supply voltage and ground; and

a connection from said third negative supply voltage to the negative terminal of said capacitor and H-bridge switch.

Dwg.1/1

Title Terms: IMPLANT; CARDIAC; DEFIBRILLATE; MULTIPHASE; SHOCK; GENERATOR; ELECTRODE; CONNECT; STIMULATING; CIRCUIT; CONTROL; CIRCUIT; SUPPLY; BATTERY; SHOCK; GENERATOR; CAPACITOR; CONTROL; ELECTRONIC; SWITCH

Derwent Class: P34; S05

International Patent Class (Main): A61N-001/39

International Patent Class (Additional): A61N-001/36; A61N-001/362

15/7,DE/14 (Item 12 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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010048988

WPI Acc No: 1994-316699/199439

Portable automatic external defibrillator circuit - has capacitor charging circuit and connections from capacitors to patients body, with several semiconductor switches arranged to connect capacitors to circuit and patient's body

Patent Assignee: SURVIVALINK CORP (SURV-N); SURVIVA LINK CORP (SURV-N)

Inventor: PERSSON E

Number of Countries: 043 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9421327	A1	19940929	WO 94US2783	A	19940315	199439	B
AU 9463655	A	19941011	AU 9463655	A	19940315	199504	
US 5405361	A	19950411	US 9331532	A	19930315	199520	
EP 689470	A1	19960103	EP 94910943	A	19940315	199606	
			WO 94US2783	A	19940315		
US 5643324	A	19970701	US 9331532	A	19930315	199732	
			US 95419373	A	19950410		
EP 689470	A4	19970611	EP 94910943	A	19940000	199746	

Priority Applications (No Type Date): US 9331532 A 19930315; US 95419373 A 19950410

Cited Patents: EP 445800; EP 487776; US 3886950; US 4050004; US 4556457; US 4576170; US 4823796

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9421327	A1	E	34	A61N-001/39	
Designated States (National): AT AU BB BG BR BY CA CH CZ DE DK ES FI GB HU JP KP KR KZ LK LU MG MN MW NL NO NZ PL PT RO RU SD SE SK UA VN					
Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE					
AU 9463655	A			A61N-001/39	Based on patent WO 9421327
US 5405361	A		8	A61N-001/39	
EP 689470	A1	E	34	A61N-001/39	Based on patent WO 9421327
Designated States (Regional): DE FR GB IT					
US 5643324	A		8	A61N-001/39	Cont of application US 9331532 Cont of patent US 5405361
EP 689470	A4			A61N-001/39	

Abstract (Basic): WO 9421327 A

The defibrillator apparatus (10) comprises several capacitors (C1

to Cn), a charging circuit (25) for the capacitors, and a connecting circuit to connect the capacitors to the patient's body. A circuit is provided which switches the capacitors between the charging circuit and the connecting circuit.

The circuit allows for the capacitors to be charged when required and uses several semiconductors switches (S1 to Sn). The charging circuit is battery powered, and the battery feeds a voltage converter circuit. The capacitors are charged connected in parallel and discharged connected in series.

ADVANTAGE - Circuit is inexpensive to construct and reliable, durable and effective at delivering defibrillating charges to body of patient.

Dwg.3/6

Abstract (Equivalent): US 5643324 A

An external defibrillator high voltage circuit for generating defibrillation pulses, including:

a pair of electrodes;

a charging power source having first and second charge supply terminals;

first and second output terminals configured for electrical interconnection to the electrodes;

first and second charge supply terminals configured for electrical interconnection to a charging voltage supply;

N capacitors Cn where N is at least 2 and n=1 . . . N, for storing electrical energy, each capacitor having first and second terminals, and the first terminal of capacitor C1 electrically coupled to the second charge supply terminal of the charging power source;

a plurality of diodes, including a diode interconnected between the second terminals of capacitors Cn and Cn+1 for each of the N capacitors;

a plurality of charging semiconductor switches for interconnecting the first terminals of the N capacitors to the first charge supply terminal and simultaneously electrically interconnecting each of the N capacitors in a parallel circuit between the first and second charge supply terminals of the charging power Source to charge the capacitors to the charging voltage when switched to an electrically closed state, and electrically isolating the capacitors from each other when switched to an electrically open state;

a plurality of discharging semiconductor switches for interconnecting the second terminal of the capacitor Cn and the first terminal of the capacitor Cn+1 for each of the N capacitors and simultaneously electrically interconnecting each of the N capacitors in a series circuit between the first and second output terminals to produce defibrillation pulses when switched to an electrically closed State, and electrically isolating the capacitors from each other when switched to an electrically open state; and

a charge dump circuit, including one or more charge dump semiconductor switches in a charge dump current flow path, for simultaneously discharging each of the N capacitors when the charge dump semiconductor switches are switched to an electrically closed state and further including a charge dump semiconductor switch in parallel with each of the N capacitors.

Dwg.4/5

US 5405361 A

The capacitors are selectively connected in parallel with each other. At least two medical connection electrodes are communicatively connected to the capacitors via conductive leads, and for placement on the body of a patient. First semiconductor switches, one fewer in number than the total number of capacitors, are disposed in series. An independent discharge path is formed by the capacitors.

Second semiconductor switches, equal in number to the capacitors, are disposed in series. A low resistance current limiter is disposed in series with each capacitor. Each limiter consists of a resistor and an

inductor. The discharge path has a resistance of less than 10 ohms. A charge dump path formed by the capacitors further comprises third semiconductor switches, each disposed across a respective capacitor for dumping charge from them at a predetermined time. Diodes disposed in series and connected to the capacitors deliver a sharply truncated waveform upon discharge to the patient.

ADVANTAGE - Low cost.

Dwg.1/5

Title Terms: PORTABLE; AUTOMATIC; EXTERNAL; DEFIBRILLATE; CIRCUIT; CAPACITOR; CHARGE; CIRCUIT; CONNECT; CAPACITOR; PATIENT; BODY; SEMICONDUCTOR; SWITCH; ARRANGE; CONNECT; CAPACITOR; CIRCUIT; PATIENT; BODY

Derwent Class: P34; S05

International Patent Class (Main): A61N-001/39

15/7,DE/15 (Item 13 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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009611989

WPI Acc No: 1993-305537/199339

Cardiac defibrillator high voltage charging circuit - has matching circuit which is arranged to allow DC voltage supply and battery to charge capacitor at different rates

Patent Assignee: HEWLETT-PACKARD CO (HEWP)

Inventor: BLILEY P D; CAMERON D B; BILLEY P D

Number of Countries: 004 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
GB 2265312	A	19930929	GB 934929	A	19930310	199339	B
DE 4308913	A1	19930930	DE 4308913	A	19930319	199340	
US 5285779	A	19940215	US 92858808	A	19920327	199407	
GB 2265312	B	19960131	GB 934929	A	19930310	199608	
JP 3345088	B2	20021118	JP 9392330	A	19930326	200279	

Priority Applications (No Type Date): US 92858808 A 19920327

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
GB 2265312	A		35	A61N-001/38	
DE 4308913	A1		8	A61N-001/39	
US 5285779	A		14	A61N-001/00	
GB 2265312	B		1	A61N-001/38	
JP 3345088	B2		13	A61N-001/39	Previous Publ. patent JP 6007461

Abstract (Basic): GB 2265312 A

The charging circuit includes a power transformer (126) that accepts an internal battery output (118) and the output from an AC-to-DC converter (112) on separate primary windings (144, 142). The secondary winding (148) of the transformer is coupled through a rectifier (128) to a storage capacitor. The transformer (126) operates in a fly-back mode, and is controlled by a PWM.

A charging circuit monitors the output voltage of both the battery and the AC-to-DC converter for their ability to charge the storage capacitor within a predetermined amount of time, enabling the battery input via switches (102, 104) and the AC to DC converter input via switch (Q12). The energy in the storage capacitor is monitored (36) to prevent overcharging.

ADVANTAGE - Reduced charge time and charge failures.

Dwg.3/8

Abstract (Equivalent): GB 2265312 B

A cardiac defibrillator charging circuit for charging a capacitor for multiple power supplies comprising:

a battery (52);
a DC voltage supply (50);
a high voltage storage and discharge capacitor (68);
a transfromer (126) having a first primary winding (144), a second primary winding (142), and a secondary winding (148), the secondary winding (148) coupled across the capacitor (68); and
switching means (34, 60) for intermittently coupling the battery (52) to the first primary winding (144) and for intermittently coupling the DC voltage supply (50) to the second primary winding (142), thereby to permit transformer action.
Dwg.0

Abstract (Equivalent): US 5285779 A

A variable rate defibrillator charging circuit includes a power transformer that accepts an internal battery output and the output from an AC to DC converter on separate prim. windings. The sec. winding of the transformer is coupled through a rectifier to a storage capacitor. The transformer operates in a fly-back mode whereby energy is discharged into the storage capacitor when the power supplies discontinue charging the transformer.

After energy in the transformer is discharged into the storage capacitor, the power supplies are reactivated, recharigng the transformer. The separate prim. windings of the transformer provide a fast, reliable, low cost means for charging the storage capacitor with multiple power supplies.

USE/ADVANTAGE - Energising cardiac defibrillator from multiple power suplies with reliable switching between them.
Dwg.2/8

Title Terms: CARDIAC; DEFIBRILLATE; HIGH; VOLTAGE; CHARGE; CIRCUIT; MATCH; CIRCUIT; ARRANGE; ALLOW; DC; VOLTAGE; SUPPLY; BATTERY; CHARGE; CAPACITOR; RATE

Derwent Class: P34; S05

International Patent Class (Main): A61N-001/00; A61N-001/38; A61N-001/39

15/7,DE/16 (Item 14 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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009578148

WPI Acc No: 1993-271694/199334

Dual battery system for implantable defibrillator - using a relatively low voltage battery for a monitoring circuit and a relatively high voltage battery for an inverter and output circuit

Patent Assignee: ANGEION CORP (ANGE-N); ANGEMED INC (ANGE-N)

Inventor: ADAMS T P; BRUMWELL D A; PERTTU J S; SUPINO C G

Number of Countries: 019 Number of Patents: 008

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5235979	A	19930817	US 91670188	A	19910315	199334	B
			US 92913626	A	19920716		
WO 9402202	A1	19940203	WO 93US6950	A	19930716	199406	
US 5235979	B1	19941101	US 91670188	A	19910315	199443	
			US 92913626	A	19920716		
EP 650383	A1	19950503	EP 93917327	A	19930716	199522	
			WO 93US6950	A	19930716		
EP 771576	A2	19970507	EP 93917327	A	19930716	199723	
			EP 96118480	A	19930716		
EP 650383	B1	19970528	EP 93917327	A	19930716	199726	
			WO 93US6950	A	19930716		
EP 771576	A3	19970521	EP 93917327	A	19930716	199731	
			EP 96118480	A	19930716		
DE 69311113	E	19970703	DE 611113	A	19930716	199732	
			EP 93917327	A	19930716		

Priority Applications (No Type Date): US 91670188 A 19910315; US 92913626 A 19920716
Cited Patents: US 4134408; US 4323075; US 4345604; US 4416282; US 4548209; No-SR.Pub; WO 9115262

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5235979	A		4	A61N-001/39	Cont of application US 91670188
WO 9402202	A1	E	22	A61N-001/378	
Designated States (National): CA JP					
Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE					
US 5235979	B1			A61N-001/39	Cont of application US 91670188
EP 650383	A1	E		A61N-001/378	Based on patent WO 9402202
Designated States (Regional): DE FR GB IT NL					
EP 771576	A2	E	12	A61N-001/378	Div ex application EP 93917327
Designated States (Regional): DE FR GB IT NL					
EP 650383	B1	E	14	A61N-001/378	Based on patent WO 9402202
Designated States (Regional): DE FR GB IT NL					
EP 771576	A3			A61N-001/39	Div ex application EP 93917327
DE 69311113	E			A61N-001/378	Based on patent EP 650383
					Based on patent WO 9402202

Abstract (Basic): US 5235979 A

The defribillator comprises 1st implantable energy source connected to and supplying an implantable monitoring circuit; and 2nd implantable energy source having a predetermined different energy output than the 1st source connected to and powering an implantable inverter/output circuit.

The 1st energy source is a relatively low voltage 1.5-30 volt, lithium iodide battery. The 2nd energy source is a relatively high voltage, 6-18 volt battery selected from lithium vanadium pentoxide, silver lithium vanadium pentoxide or lithium vanadium oxide chemistry.

USE/ADVANTAGE - Dual, battery system for use with an implantable defibrillator. Greater longevity is provided for by lower energy drain from the monitoring circuit, and greater efficiency in the high voltage inverter output circuit allows a smalller battery to provide an increased number of shocks. A rechargeable inverter/output battery system may be used.

Dwg.3/3

Abstract (Equivalent): EP 650383 B

A power system for an implantable cardioverter defibrillator that is a self-contained human implantable device having monitoring means for detecting myocardial arrhythmias in a human patient and output means for selectively determining an appropriate electrical pulse therapy to two or more implanted electrodes, comprising first battery means (111, 112) for providing electrical power primarily to the monitoring means; second battery means (121, 122) for providing substantially all of its electrical power to the output means; characterised by backup means for allowing the second battery means (121, 122) to provide electrical power to the monitoring means in the event that the first battery means (111, 112) can no longer provide electrical power to the monitoring means.

Dwg.5a/6

Abstract (Equivalent): US 5235979 A

An implantable defibrillator comprises a first implantable energy source connected to an implantable monitoring circuit means and a second implantable energy source having a predetermined different energy output than said first implantable energy source connected to an implantable inverter/output circuit means.

The monitoring circuit is powered by the first implantable energy source and the implantable inverter/output circuit is powered by the

second implantable energy source.
Title Terms: DUAL; BATTERY; SYSTEM; IMPLANT; DEFIBRILLATE; RELATIVELY; LOW; VOLTAGE; BATTERY; MONITOR; CIRCUIT; RELATIVELY; HIGH; VOLTAGE; BATTERY; INVERTER; OUTPUT; CIRCUIT
Derwent Class: L03; P34
International Patent Class (Main): A61N-001/378; A61N-001/39

? t s16/7,de/all

16/7,DE/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
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00970614 INSPEC Abstract Number: B76043468
Title: Design of an ultrahigh-energy hydrogen thyratron/SCR research defibrillator
Author(s): Schuder, J.C.; Gold, J.H.
Author Affiliation: Dept. of Surgery, Univ. of Missouri, Columbia, MO, USA
Journal: Medical Instrumentation vol.10, no.3 p.146-50
Publication Date: May-June 1976 Country of Publication: USA
CODEN: MLISBY ISSN: 0735-6757
Language: English Document Type: Journal Paper (JP)
Treatment: New Developments (N); Practical (P)
Abstract: The design features of an ultrahigh-energy research defibrillator using three voltage sources are described. The first is a 60-Hz supply of adjustable amplitude and duration for inducing fibrillation. The second source uses an 18000-joule capacitor bank which can be charged to 800, 1600, or 2400 volts. SCRs (silicon controlled rectifier) in series with the chest are used to initiate the discharge, and SCRs shunting the capacitor bank terminate the discharge. The third source employs another 18000-joule capacitor bank which can be charged to 5000, 10000, or 15000 volts. (6 Refs)
Subfile: A B
Descriptors: defibrillators; thyratrons; thyristor applications

16/7,DE/2 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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0013323177 BIOSIS NO.: 200100495016
Defibrillator having a monitor with rotatable screen content
AUTHOR: Magin Thomas (Reprint)
AUTHOR ADDRESS: Umkirch, Germany**Germany
JOURNAL: Official Gazette of the United States Patent and Trademark Office Patents 1246 (2): May 8, 2001 2001
MEDIUM: e-file
ISSN: 0098-1133
DOCUMENT TYPE: Patent
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A defibrillator (1) having an integrated surveillance monitor (10), on the screen of which vital parameters of a patient can be displayed in the form of a rotatable screen content, having a built-in accumulator (9) for power supply independently of the main power supply and having a connection device (2, 3, 7) for external power supply and for recharging the accumulator (9). The screen content is rotatable from a first position relative to the housing to a second position relative to the housing in response to a change in position of the housing.
DESCRIPTORS:
MAJOR CONCEPTS: Cardiovascular Medicine--Human Medicine, Medical Sciences

; ,Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques
METHODS & EQUIPMENT: built-in accumulator--medical equipment; defibrillator--medical equipment; external power supply--equipment; integrated surveillance monitor--medical equipment

16/7,DE/3 (Item 1 from file: 73)
DIALOG(R)File 73:EMBASE
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06294950 EMBASE No: 1995319881
Biophysical basis and cardiac lesions produced by different techniques of cardiac arrhythmia ablation
BASES BIOPHYSIQUES ET LESIONS CARDIAQUES PRODUITES PAR LES DIFFERENTES TECHNIQUES D'ABLATION DES ARYTHMIES CARDIAQUES
Levy S.
Hopital Nord, Service de Cardiologie,13915 Marseille Cedex 20 France
Archives des Maladies du Coeur et des Vaisseaux (ARCH. MAL. COEUR VAISS.) (France) 1995, 88/10 (1465-1469)
CODEN: AMCVA ISSN: 0003-9683
DOCUMENT TYPE: Journal; Review
LANGUAGE: FRENCH SUMMARY LANGUAGE: FRENCH; ENGLISH

Although pharmacological treatment of cardiac arrhythmias remains by far the most widely used, non-pharmacological methods are acquiring an increasing role in their management. This update concerns ablation techniques of the normal and accessory pathways and arrhythmogenic foci and the biophysical basis and the mechanisms of the lesions. A number of energy sources and ablation catheters were used to treat the arrhythmias. Continuous electrical current of fulguration was the first energy source to be used. This required a classical external defibrillator connected to an 'active' electrode at the tip of a catheter and to a larger skin electrode ('passive'). The mechanism of ablation in fulguration uses the thermal energy produced at the tip of the electrode. Other mechanisms such as the creation of an electrical field and a sudden increase in pressure ('barotrauma') also play a role. The lesions produced are deep and proportional to the energy, size and form of the electrodes and the form of the electrical current. The radiofrequency current has replaced fulguration in most indications. It uses alternate current with frequencies usually ranging between 350 and 700 kHz delivered between a wide distal electrode (7 F, 4 mm) tip and a skin electrode. They are on small and characterised by the destruction of the cellular architecture by coagulation or dessication related to the hyperthermia. The size of the lesions depends on the amount of energy delivered, the size of electrode and the quality of contact with the cardiac tissues. Other types of ablation are under study but have not yet been shown to be superior to radiofrequency energy.

MEDICAL DESCRIPTORS:
*heart arrhythmia--therapy--th
catheter ablation; defibrillator; electric field; human; laser surgery; radiofrequency; review; temperature

16/7,DE/4 (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
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13048561 PMID: 8745619
[Biophysical basis and cardiac lesions caused by different techniques of cardiac arrhythmia ablation]
Bases biophysiques et lesions cardiaques produites par les differentes techniques d'ablation des arythmies cardiaques.

Levy S
Hopital Nord, service de cardiologie, Marseille.
Archives des maladies du coeur et des vaisseaux (FRANCE) Oct 1995, 88 (10) p1465-9, ISSN 0003-9683 Journal Code: 0406011
Document type: Journal Article; Review; Review, Tutorial ; English Abstract
Languages: FRENCH
Main Citation Owner: NLM
Record type: Completed
Although pharmacological treatment of cardiac arrhythmias remains by far the most widely used, non-pharmacological methods are acquiring an increasing role in their management. This update concerns ablation techniques of the normal and accessory pathways and arrhythmogenic foci and the biophysical basis and the mechanisms of the lesions. A number of energy sources and ablation catheters were used to treat the arrhythmias. Continuous electrical current of fulguration was the first energy source to be used. This required a classical external defibrillator connected to an "active" electrode at the tip of a catheter and to a larger skin electrode ("passive"). The mechanism of ablation in fulguration uses the thermal energy produced at the tip of the electrode. Other mechanisms such as the creation of an electrical field and a sudden increase in pressure ("barotrauma") also play a role. The lesions produced are deep and proportional to the energy, size and form of the electrodes and the form of the electrical current. The radiofrequency current has replaced fulguration in most indications. It uses alternate current with frequencies usually ranging between 350 and 700 kHz delivered between a wide distal electrode (7 F, 4 mm) tip and a skin electrode. They are on small and characterised by the destruction of the cellular architecture by coagulation or dessication related to the hyperthermia. The size of the lesions depends on the amount of energy delivered, the size of electrode and the quality of contact with the cardiac tissues. Other types of ablation are under study but have not yet been shown to be superior to radiofrequency energy. (28 Refs.)
Descriptors: *Arrhythmia--surgery--SU; *Catheter Ablation; Catheter Ablation--adverse effects--AE; Catheter Ablation--instrumentation--IS; Catheter Ablation--methods--MT; Cryosurgery; Laser Surgery; Microwaves
Record Date Created: 19960926
Record Date Completed: 19960926

16/7,DE/5 (Item 2 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
(c) format only 2004 The Dialog Corp. All rts. reserv.

11211471 PMID: 11252874
Teaching colleagues and the general public about automatic external defibrillators.
Beaumont E
Progress in cardiovascular nursing (United States) Winter 2001, 16 (1) p26-9, ISSN 0889-7204 Journal Code: 8704064
Document type: Journal Article; Review; Review, Tutorial
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
Every year 250,000 or more people with cardiovascular disease die within an hour of symptom onset and before they arrive at a hospital. With appropriate early defibrillation and follow-up treatment many people who might have died can now live. Nurses are key health care professionals for using automatic external defibrillators in hospitals and for teaching other first responders--inside and outside hospitals--how to use automatic external defibrillators. Features of automatic and semiautomatic external defibrillators are reviewed as well as ethical considerations for the use of automatic external defibrillators. (14 Refs.)

Descriptors: *Education, Nursing, Continuing--methods--MT; *Electric Countershock--instrumentation--IS; *Health Education--methods--MT; *Teaching--methods--MT; Automation; Aviation; Electric Countershock --nursing--NU; Electric Countershock--statistics and numerical data--SN; Equipment Design; Ethics, Nursing; First Aid--instrumentation--IS; First Aid--methods--MT; First Aid--nursing--NU; Power Sources; Ships; Time Factors; Workplace
Record Date Created: 20010316
Record Date Completed: 20010531

16/7,DE/6 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013947592
WPI Acc No: 2001-431806/200146
Cardio-therapeutic defibrillator capacitor charging circuit has trigger pulse generator to reset series of reset pulses to synchronize variable pulse width generator based on trigger signal from feed collapse sensor
Patent Assignee: MEDICAL RES LAB INC (MEDI-N)
Inventor: GARRETT M C
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6243604	B1	20010605	US 99259113	A	19990226	200146	B

Priority Applications (No Type Date): US 99259113 A 19990226
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6243604	B1		11	A61N-001/39	

Abstract (Basic): US 6243604 B1
Abstract (Basic):

NOVELTY - A magnetic field collapse sensor senses magnetic field collapse in transformer (530) and outputs a trigger signal. A trigger variable pulse width generator (510) produces an output pulse signal based on driving signal and resettable based on the reset signal received at reset port. A trigger pulse generator (542) resets the series of reset pulses to synchronize the width generator in response to trigger signal received from field collapse sensor.

DETAILED DESCRIPTION - A pulse transformer having a magnetic field which rises and collapses while charging defibrillator capacitors. A transformer switch (520) coupled to transformer primary winding, controls the energy consumption of source (504). A comparator (524) having two inputs and an output, is coupled to variable pulse width generator reset port. A self-triggering oscillator (540) delivers a series of pulses to pulse width generator. A reset port receives reset signal, so as to reset the series of pulses.

USE - For charging cardio-therapeutic defibrillators.

ADVANTAGE - Provides rapid charging of the defibrillator capacitors with minimum charging time in which a larger number of defibrillator therapy events can be generated despite greater variation in power source conditions. Eliminates unexpected stress to certain components of defibrillator during unusual operating conditions, due to direct control of peak current in charging circuit.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic block diagram of defibrillator capacitor charging circuit.

Source (504)
Pulse width generator (510)
Transformer switch (520)
Comparator (524)
Transformer (530)

Self-triggering oscillator (540)
Trigger pulse generator (542)
pp; 11 DwgNo 2/2
Title Terms: CARDIO; THERAPEUTIC; DEFIBRILLATE; CAPACITOR; CHARGE; CIRCUIT; TRIGGER; PULSE; GENERATOR; RESET; SERIES; RESET; PULSE; VARIABLE; PULSE; WIDTH; GENERATOR; BASED; TRIGGER; SIGNAL; FEED; COLLAPSE; SENSE
Derwent Class: P34; S05; T01; U22; U24
International Patent Class (Main): A61N-001/39

16/7,DE/7 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

013192487
WPI Acc No: 2000-364360/200031
High current electrode, transthoracic and transmyocardial impedance estimation used in electric cardiac therapy
Patent Assignee: CARDIOTRONICS (CARD-N)
Inventor: BAURA G D
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6058325	A	20000502	US 96632878	A	19960416	200031	B
			US 96699582	A	19960819		

Priority Applications (No Type Date): US 96699582 A 19960819; US 96632878 A 19960416
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6058325	A		17	A61N-001/39	CIP of application US 96632878

Abstract (Basic): US 6058325 A
Abstract (Basic):

NOVELTY - The method involves equating the first and second estimated transfer functions to derive the respective resistance and reactive components of an estimated patient and electrode impedance.

DETAILED DESCRIPTION - The first defibrillation voltage is supplied across the electrodes in series with a selected load resistor (14). After which, the resulting output voltage (Vout(t)) is measured. The first transfer function between the first defibrillation voltage and measured output voltage is estimated based on circuit analysis. The second transfer function between the first defibrillation voltage and measured output voltage is estimated based on modeling technique.

USE - Used in electric cardiac therapy. For adjusting time varying output voltage level supplied by defibrillator discharge capacitor to a patient over an electrode pair.

ADVANTAGE - Ensures accurate estimation of actual electrode and transthoracic impedance, taking fully into account both resistance and reactive components of impedance. Makes true measurements within external defibrillator connected to an electrode pair for adjusting stored energy level required to deliver a desired charge to a patient. Repeats electrocardiography (ECG) waveforms across display monitor during impedance measurement to minimize changes in the defibrillator shock advisory algorithms and to prevent user confusion that may occur if the reference square wave voltage appear along with the ECG waveforms on the monitor. Minimizes error between observed an calculated decay to estimate capacitance.

DESCRIPTION OF DRAWING(S) - The figure shows the functional block diagram of a preferred impedance estimation module used in the high current, transthoracic and transmyocardial impedance estimation.

Load resistor (14)
) Measured output voltage (Vout(t)

pp; 17 DwgNo 1/8
Title Terms: HIGH; CURRENT; ELECTRODE; IMPEDANCE; ESTIMATE; ELECTRIC; CARDIAC; THERAPEUTIC
Derwent Class: P34; S05
International Patent Class (Main): A61N-001/39

16/7,DE/8 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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012923939
WPI Acc No: 2000-095775/200008
Field leakage detection system for flyback transformer of implantable cardioverter defibrillator
Patent Assignee: ANGEION CORP (ANGE-N)
Inventor: DROPPS F
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5994880	A	19991130	US 9856321	A	19980407	200008	B

Priority Applications (No Type Date): US 9856321 A 19980407
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5994880	A		13	H01M-010/44	

Abstract (Basic): US 5994880 A
Abstract (Basic):
NOVELTY - A current driver supplies current to primary winding of a flyback transformer. A giant magnetoresistive ratio (GMR) bridge is magnetically coupled with the transformer for providing varying resistance ratio depending on the state of the transformer field. The output of the GMR bridge is given to a control circuit to control the current driver depending on state of the transformer field.
DETAILED DESCRIPTION - The control circuit has a differential amplifier to receive output of GMR bridge and to generate electrical signal indicative of sensed state of the transformer field. Output of the differential amplifier is given to reference comparators to generate control signal for the current driver.
USE - For flyback transformer in implantable cardioverter defibrillator.
ADVANTAGE - Since the current driver of transformer is controlled depending on state of the transformer field, residual magnetic energy storage within the flyback transformer core is fully utilized so efficiency of the charging cycles is increased.
DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of implantable cardioverter defibrillator system.
pp; 13 DwgNo 1/5
Title Terms: FIELD; LEAK; DETECT; SYSTEM; FLYBACK; TRANSFORMER; IMPLANT; CARDIOVERTER; DEFIBRILLATE
Derwent Class: S05; X16
International Patent Class (Main): H01M-010/44
International Patent Class (Additional): H01M-010/46

16/7,DE/9 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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010802794
WPI Acc No: 1996-299747/199630
Implantable atrial defibrillator for applying cardioverting electrical

energy to human heart - has first detector for sensing atrial activity of heart, atrial fibrillation detector responsive to activity for determining when atria need cardioversion, and cardiovertor
Patent Assignee: INCONTROL INC (INCO-N); CARDIAC PACEMAKERS INC (CARD-N); INFINGER K R (INFI-I)
Inventor: INFINGER K R
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5527345	A	19960618	US 94243858	A	19940517	199630	B
CA 2145592	A	19951118	CA 2145592	A	19950327	199632	
CA 2145592	C	20020129	CA 2145592	A	19950327	200211	

Priority Applications (No Type Date): US 94243858 A 19940517
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5527345	A		8	A61N-001/39	
CA 2145592	A			A61N-001/39	
CA 2145592	C	E		A61N-001/39	

Abstract (Basic): US 5527345 A

The implantable atrial defibrillator for applying cardioverting electrical energy to the atria of a human heart in need of cardioversion and for pacing the heart in a demand mode, has a first detector for sensing atrial activity of the heart. An atrial fibrillation detector responds to the detected atrial activity for determining when the atria of the heart are in need of cardioversion. A cardioverting device responds to the atrial fibrillation detector for applying the cardioverting electrical energy to the atria of the heart when the atria are in need of cardioversion. A pacing device paces the heart in a demand mode.

A depletable power source provides electrical power to the first detector, the atrial fibrillation detector, the cardioverter, and the pacing device. A control element enables the pacing device in response to the cardioverter applying the cardioverting electrical energy to the atria, and then disables the pacing device in response to the occurrence of a predetermined event for conserving the depletable power source. The pacing device includes a pacing output for applying pacing electrical energy to the heart and a sensing device for sensing activity of the heart. The enabling and disabling device governs the operation of the pacing output and the sensing device.

ADVANTAGE - Avoids undue power consumption of depletable power source

Dwg.1/1

Title Terms: IMPLANT; ATRIUM; DEFIBRILLATE; APPLY; ELECTRIC; ENERGY; HUMAN; HEART; FIRST; DETECT; SENSE; ATRIUM; ACTIVE; HEART; ATRIUM; FIBRILLATE; DETECT; RESPOND; ACTIVE; DETERMINE; NEED
Index Terms/Additional Words: PACER; PACE-MAKER
Derwent Class: P31; P34; S05; U24; X16
International Patent Class (Main): A61N-001/39
International Patent Class (Additional): A61B-005/046

16/7,DE/10 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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008907104
WPI Acc No: 1992-034373/199205
Implantable iontophoretic drug delivery system - has two electrodes positioned adjacent tissue site and connected by leads to power source, pump for supplying medicine, and pulse generator
Patent Assignee: AVITALL B (AVIT-I); AVITAL B (AVIT-I)

Inventor: AVITALL B
Number of Countries: 008 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 468636	A	19920129				199205	B
US 5087243	A	19920211	US 90539611	A	19900618	199209	
CA 2044791	A	19911219				199211	
EP 468636	B1	19950830	EP 91305522	A	19910618	199539	
DE 69112533	E	19951005	DE 612533	A	19910618	199545	
			EP 91305522	A	19910618		
CA 2044791	C	19980714	CA 2044791	A	19910617	199839	

Priority Applications (No Type Date): US 90539611 A 19900618
Cited Patents: DE 3735137; EP 280564; EP 47013; US 4477971; US 4577642; US 4639244; US 4898585; EP 47013
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 468636	A		10		
Designated States (Regional): AT DE FR GB IT NL					
US 5087243	A		7		
EP 468636	B1	E	10	A61N-001/30	
Designated States (Regional): AT DE FR GB IT NL					
DE 69112533	E			A61N-001/30	Based on patent EP 468636
CA 2044791	C			A61N-001/39	

Abstract (Basic): EP 468636 A

Medicines are applied rapidly to specific tissue sites using an implantable iontophoretic delivery system. This has two electrodes positioned adjacent the tissue site and connected by leads to an electrical power source. The first electrode is adapted to receive, contain and dispense medicine from a stored supply into the tissue under the control of electrical pulses. The second electrode cooperates with the first to cause infusion of the medicine.

A pump is used to supply the desired amt. of medicine from the stored supply. A pulse generator produces the delivery pulses which are fed to the electrodes via a circuit. The medical condition of the tissue is sensed and a controller is used to activate and deactivate the pump and pulse generator in response to the sensed condition.

USE/ADVANTAGE - The iontophoretic device is pref. used in combination with an implanted defibrillator to deliver medicines such as an antiarrhythmic drug to an arrhythmogenic site of infarcted heart tissue (claimed). Other drugs include vasodilators or iontropic drugs. The system maximises the concn. of the drug delivered to the site of interest, and minimises the systemic concn. of the drug, thereby reducing side effects.

Dwg.4/4

Abstract (Equivalent): EP 468636 B

An implantable delivery apparatus for use in applying medicinal materials rapidly to specific tissue sites of interest, the apparatus comprising first and second electrodes (11,12) proximately positionable with respect to the tissue site of interest and connected by leads (31,32) to a source (35) of electricity, wherein the first electrode (11) is further adapted to receive, contain and dispense medication from a stored supply thereof into proximate tissue of interest; storage means (23) for storing a supply of the medication and connected via conduit means (15) with the first electrode (11); pulse generating means for generating a series of electric current pulses; circuit means (31,32) connected to the source for supplying current pulses to the electrodes (11,12); characterised by pump means (34) for supplying an amount of the medication from the storage means (23) to the first electrode means (11) on demand; condition sensing means (25,26) for sensing medical conditions in the tissue of interest requiring application of the medication to the tissue of interest; and

computerised control means (36) for activating and deactivating the pump means (34) and the pulse generating means in response to sensed conditions or in fixed interval form, wherein the circuit means (31,32) supplies a series of benign electric pulses to the first electrode in response to the sensed conditions and the second electrode is disposed to co-operate with the first electrode to cause iontophoretic infusion of the medicinal material in the desired direction to supply the medication into the proximate tissue of interest.

(Dwg.4/4)

Abstract (Equivalent): US 5087243 A

The system consists of a pair of electrodes, including anodic and cathodic electrodes, one of which is designed to dispense the medication of interest, proximately located with respect to the tissue of interest and connected by electrical leads to a subcutaneous independent source of electricity. A subcutaneously situated pouch is provided for containing the drugs of interest. The implanted pouch is designed to be subcutaneously replenished through the skin with a relevant drug from time to time. The pouch is connected with the administering electrode of the electrode system via a pumping mechanism connected by a tube from the storage compartment to the proper patch electrode.

The medication is an antiarrhythmic drum which may utilise an existing implantable defibrillator device as a power source or it may be connected to a specially designed power source. The implantable defibrillator unit is embedded over the abdomen under the skin and the antiarrhythmic storage compartment is designed to be replenished subcutaneously by connection inlet. The pumping mechanism is configured to be powered from the implantable defibrillator power source. The implantable pump would be similar to the implantable pumps used primarily for chemotherapy and insulin drug delivery.

ADVANTAGE - Minimises systemic concentration of medication and reduces side effects. (7pp)

Title Terms: IMPLANT; IONTOPHORESIS; DRUG; DELIVER; SYSTEM; TWO; ELECTRODE; POSITION; ADJACENT; TISSUE; SITE; CONNECT; LEAD; POWER; SOURCE; PUMP; SUPPLY; MEDICINE; PULSE; GENERATOR

Derwent Class: B07; P34; S05

International Patent Class (Main): A61N-001/30; A61N-001/39

International Patent Class (Additional): A61N-001/18

16/7,DE/11 (Item 6 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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007279997

WPI Acc No: 1987-277004/198739

Automatic implantable defibrillator and pacer - has pacing energy storage charged from residual energy to permit high energy pacing after defibrillation

Patent Assignee: MEDTRONIC INC (MEDT)

Inventor: ADAMS T

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4693253	A	19870915	US 81246528	A	19810323	198739	B

Priority Applications (No Type Date): US 81246528 A 19810323

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4693253	A		5		

Abstract (Basic): US 4693253 A

The implantable defibrillator and pacer comprises a lead system for

coupling the patient's heart to the defibrillator and pacer and for delivering cardioverting and pacing energy to the heart. A sense amplifier couples to the heart for detecting the depolarization of cardiac tissue. An energy storage stores both the cardioverting energy and pacing energy. A primary energy source supplies energy to the energy storage.

An energy converter coupled to the primary energy source and the energy storage supplies energy to the energy storage at a voltage higher than the voltage of the primary energy source. Another energy storage stores the pacing energy. A switch is coupled to the energy storage for delivering the cardioverting energy to the lead system in response to a control signal.

2/4

Title Terms: AUTOMATIC; IMPLANT; DEFIBRILLATE; PACE; PACE; ENERGY; STORAGE; CHARGE; RESIDUE; ENERGY; PERMIT; HIGH; ENERGY; PACE; AFTER; DEFIBRILLATE
Derwent Class: P34; S05
International Patent Class (Additional): A61N-001/36

16/7,DE/12 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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001706677
WPI Acc No: 1977-E3164Y/197721
Capacitor charging circuit with induction unit - with control of strong magnetic field between min. and max. for e.g. defibrillators
Patent Assignee: DATASCOPE CORP (DATA-N)
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 2651006	A	19770518				197721	B
US 4070699	A	19780124				197806	

Priority Applications (No Type Date): US 75630499 A 19751110

Abstract (Basic): DE 2651006 A

Capacitor charging circuit for portable defibrillator comprises a capacitor (12) connected to an induction unit (16) connected to the energy source (10) for generating a magnetic field and transmitting energy to the capacitor when no longer connected, allowing the magnetic field to drop.

Switches (24) between the induction unit and energy source repeatedly connect them in successive cycles during each of which the induction unit is first connected to the energy source to generate the magnetic field to a max., then disconnected to cause the drop. The switches begin each cycle when the field has reached a given min. well above zero. Pref. the induction unit is a coil with a primary winding (18) connected to the switches, and a secondary winding (20) connected to the capacitor.

Title Terms: CAPACITOR; CHARGE; CIRCUIT; INDUCTION; UNIT; CONTROL; STRONG; MAGNETIC; FIELD; MINIMUM; MAXIMUM; DEFIBRILLATE
Derwent Class: P34; S05; X13
International Patent Class (Additional): A61N-001/40; H02H-007/12

? show files
File 158:DIOGENES(R) 1976-2004/Mar W3
(c) 2004 DIOGENES
File 198:Health Devices Alerts(R) 1977-2004/Mar W3
(c) 2004 ECRI-nonprft agncy

? t s16/9/all

16/9/1 (Item 1 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

01704761 DIOGENES RECORD NUMBER: 1711439
MDR REPORT - FINAL DEFIBRILLATOR MODEL 78670A. MALFUNCTION.
DEVICE CLASSIFICATION: (LDD) DC-DEFIBRILLATOR, LOW-ENERGY (INCLUDING PADDLES). 870-5300. 870.5300.
COMPANY NAME: HEWLETT PACKARD CO (HEWLPACK)
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA MDR LIST (MDR). LIST EDITION: FEBRUARY 2000
PUBLICATION DATE: June 28, 1996 (19960628)
RECORD TYPE: Fulltext
(Short)
DOCUMENT TYPE: DEVICE (DEV) M880254
LANGUAGE: English
DEFIBRILLATOR CONNECTED TO ITS CHARGER BASE WAS BROUGHT TO A CARDIAC ARREST. IT WOULD NOT CHARGE ABOVE 30J EVEN THOUGH CHARGER BASE WAS CONNECTED TO AC POWER. LOW BATTERY INDICATOR WAS FLASHING EVEN THOUGH CHARGER BASE WAS CONNECTED TO AC POWER. PT SURVIVED. UNIT WAS TESTED BY HOSP BIOMEDICAL ENGINEER WHO FOUND BATTERY TO BE DEPLETED. BATTERY WAS RECHARGED IN A SEPARATE BATTERY CHARGER AND FOUND TO BE IN GOOD CONDITION. PROBLEM WAS FOUND IN MATING OF CONNECTORS ON CHARGER BASE AND DEFIBRILLATOR; THERE IS A NARROW RANGE IN WHICH PIN SUPPLYING POWER FOR MONITORING CIRCUITS MATES BEFORE TWO PINS SUPPLYING BATTERY CHARGING POWER ANND DEFIB CHARGING POWER. THIS CONDITION IS PROBABLY DUE TO WEAR ON 13-YEAR-OLD CONNECTORS OF TWO UNITS INVOLVED. IT CAN BE PREVENTED BY FULLY SEATING DEFIBRILLATOR INTO CHARGER BASE. HOSP PERSONNEL HAVE BEEN SO ADVISED.

16/9/2 (Item 2 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
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00020255 DIOGENES RECORD NUMBER: 00055170
STAT-PACE II TRANSESOPHAGEAL PACING SYSTEM (SEECOR): SUMMARY OF SAFETY AND EFFECTIVENESS DATA, USER'S MANUAL PP: 37. (ONLY SUMMARY OF SAFETY AND EFFECTIVENESS DATA ONLINE FULL TEXT).
DEVICE CLASSIFICATION: PACEMAKER.
COMPANY NAME: SEECOR
DEVICE/DRUG NO.: P840002.
SOURCE: FOI SERVICES FULL TEXT (FT).
RECORD TYPE: Fulltext
WORD COUNT: 4018 (Long)
DOCUMENT TYPE: DEVICE (DEV).
LANGUAGE: English
I. GENERAL INFORMATION
Device Generic Name: transesophageal pacing system
Device Trade Name: Stat-Pace II Transesophageal Pacing System
Applicant's Name and Address: Seecor, Inc.
7731 Sand Drive
Fort Worth, TX 76118
PMA Number: P840002
Date of Panel Recommendation: April 21, 1986
Date of Notice of Approval to the Applicant: April 30, 1986
II. INDICATIONS FOR USE
The Stat-Pace II Transesophageal Pacing System (hereafter referenced as Stat- Pace II) is indicated for (1) the treatment of supraventricular tachyarrhythmias: (a) atrial flutter and (b) paroxysmal supraventricular tachycardia including 1. paroxysmal atrial tachycardia and 2. Wolf-Parkinson- White Syndrome, (2) induction of increased heart rate for

diagnostic studies, and (3) the differential diagnosis of certain dysrhythmias by means of the esophageal electrogram.

Indication (3) above may be performed by a class II device (ECG) and does not require premarket approval.

Supraventricular tachyarrhythmias are disorders of heart rhythms in which the atria beat rapidly. These abnormal rhythms may be caused by two mechanisms: (1) reentry of cardiac depolarizations (the electrical signal for the heart muscle to contract) or (2) enhanced automaticity of a portion of the heart muscle that emits depolarizations at a rapid rate. Treatment may consist of drug therapy, cardioversion, the use of implantable pacemakers designed for the treatment of supraventricular tachyarrhythmias, or the use of the Stat-Pace II, depending on how rapidly rate slowing needs to be achieved, whether the patient can tolerate the required medication, and whether treatment with medication is successful. Acceleration of a patient's heart rate is sometimes required for cardiac diagnostic studies, particularly testing for the presence of significant arteriosclerotic heart disease. The procedure involves acceleration of the heart rate to values determined by the physician in order to disclose electrocardiographic (ECG) changes, the development of chest pain, abnormalities of blood pressure response, or abnormal motion of the walls of the heart as observed by two dimensional echocardiography. The Stat-Pace II has been used to accelerate heart rate in patients who are unable to accelerate their heart rate by exercise, which is the usual means of achieving heart rate acceleration.

III. Device Description

The Stat-Pace II consists of a battery operated pulse generator and a commercially available bipolar pacing lead referred to as the Stat-Cath. The Stat-Pace II is encased in a high impact resistance Acrynitril-Butadein-Styrol (ABS) plastic case having a detachable clam-shell type lid that protects all of the controls. The lid provides storage space for extra pre-sterilized catheters. The pulse generator dimensions are 24.13 x 31.12 x 11.43 centimeters. It weighs 2,270 grams. The Stat-Pace II pacemaker has a rate adjustable from 50 to 800 beats per minute (bpm); a pulse width adjustable from 2 to 10 milliseconds (ms); and a current adjustable from 6 to 60 milliamperes (mA) with a maximum of 30 volts (v) at 60 mA into a 50 ohm load + 10%. The power source consists of two 1.5 volt alkaline D cell batteries. The battery life is 100 hours at 60mA (500 ohm load). The Stat-Pace II is defibrillator protected to 5,000 volts or to greater than 400 watt seconds. Caution must be exercised to prevent defibrillation or cardioversion discharge through an indwelling esophageal catheter. The applicant advises that the catheter be removed during those procedures. The Mode-Select switch of the Stat-Pace II controls the OFF, RECORD and PACE modes. The device gives a beep signal for each pulse produced by the Stat-Pace II but the signal does not indicate capture. The PACER OUT jacks of the device accept the standard ECG recorder leads for recording the esophageal electrogram. In the RECORD mode, the RECORD jacks are connected to the PACER OUT jacks. A standard electrocardiograph machine is connected to the patient and to the Stat-Pace II. The Lead I ECG tracing becomes the bipolar transesophageal electrogram. The applicant recommends that the transesophageal electrogram be taken prior to pacing because the optimum position of the catheter electrodes can be ascertained by observing the amplitude of the P-wave. The device has a red pacing indicator light that flashes at the pacing rate when there is current flow between the Stat-Cath electrodes. This indication does not necessarily mean that the heart is being paced. The device contains a battery level indicator that indicates in red when the batteries need replacing.

The standard Stat-Cath bipolar catheter is 8 French in diameter with two electrodes spaced 30 mm apart. Other commercially available bipolar transvenous pacing catheters are electrically compatible with the Stat-Pace II. The Stat-Cath is intended to be introduced into the patient's esophagus by a technique very common in medical practice. The electrical discharge passes through the wall of the esophagus and stimulates those portions of the heart which are in close proximity to the esophagus anatomically.

IV. ALTERNATIVE PRACTICES

The usual treatment for supraventricular tachyarrhythmias is by means of drugs, administered by mouth or intravenously, depending on the degree of danger the patient experiences as a result of the arrhythmia. In most cases, this method of treatment is satisfactory, since - in contrast to ventricular arrhythmias - supraventricular arrhythmias are not ordinarily life-threatening. There are, however, occasions when the arrhythmia produces such rapid deterioration of the patient's conditions that drug therapy is too slow, and the patient then requires a more rapid means of terminating the arrhythmia such as the Stat-Pace II or electrical cardioversion. There are also instances in which patients are unable to tolerate the drugs necessary to achieve conversion and electrical means must be used.

As mentioned previously, for diagnostic studies the usual methods of increasing heart rate and stressing the heart is exercise. Some patients, due to infirmity or orthopedic conditions, are not able to perform the required exercise. Some cardiac diagnostic techniques are difficult to perform in an exercising patient. In such cases, the Stat-Pace II may be used to pace the heart at rates above the patient's intrinsic heart rate, and such use with two dimensional echocardiography is the use most extensively studied by the applicant.

V. POTENTIAL ADVERSE EFFECTS

Potential adverse effects associated with the use of the Stat-Pace II System include: (1) injury to the esophageal mucosa; (2) esophageal perforation; (3) initiation of an unwanted abnormal cardiac rhythm (such as ventricular tachycardia with high rate cardiac failure) during or after pacing; (4) loss of pacemaker function due to component failure, power failure or user error; and (5) mild discomfort. The Stat-Pace II is defibrilllator protected, but the energy from defibrillation or cardioversion might be shunted into the esophageal catheter, therefore the catheter must be removed during those procedures. The Stat-Pace II should not be used for transvenous or epicardial pacing, as current settings could exceed nominal endocardial thresholds with resulting myocardial damage.

Contraindications for use of the device include any condition of the esophagus (such as stricture, left atrial enlargement, neoplasms, esophageal varices, inflammation) adversely affected by inserting a nasoesophageal catheter, any condition in which cardiac pacing would be contraindicated, pregnancy, use in emergency situations except as ordered by a physician, continuous pacing exceeding 6 monutes, and in the presence of electrosurgical devices.

VI. SUMMARY OF STUDIES

A. In Vitro Studies

Each lot of individual electronic components was randomly checked to verify compliance to specification. All of the generators were calibrated according to specifications. Each finished pulse generator was subjected to a 24-hour burn-in procedure at 30 ma, 100 ppm and 2 ms under a 500 ohm load. After burn- in, the generators were checked and the performance was verified to be within specifications.

The output was also subjected to a cold test by spraying "freeze-cool" on the circuit to reduce the temperature to at least 0 degrees C in order to verify that the output pulse is within specifications.

B. In Vivo Studies

Animal studies were conducted at the Texas College of Osteopathic Medicine, Fort Worth, TX. The purpose of the studies was to verify how well the device could safely and effectively perform atrial pacing via the esophagus. Three dogs were anesthetized and intubated, and ECG, pulse, arterial pressure and respiration were monitored. Three electrodes were placed on the shaven chest wall of the canines in the standard lead positions I, II, III. The dogs, ranging in weight from 50 to 60 pounds, were transesophageally paced using a bipolar Medidyne catheter with a 50 mm electrode spacing. The canine heart rate was slowed to approximately 40 bpm. Then the Stat-Pace II was turned on at the lowest setting and the

current and rate were adjusted to capture and pace the heart up to a fixed value (100 bpm), after which the Stat-Pace II was abruptly turned off with the heart rate returning to 40 bpm. The esophagi of the animals that participated in the above studies showed no evidence of lesions. The applicant failed to find in the literature histological evidence of lesions produced by the delivery of high power levels to the esophagi of dogs.

A study of the Stat-Pace II in three dogs (50-60 pounds) was conducted at the Resuscitation Research Laboratory, Camarillo, CA. The puspose of this study was to investigate the effectiveness of various techniques for transesophageal pacing on dogs with permanent heart block. The dogs were anesthetized, intubated, and monitored (ECG and blood pressure) to verify complete capture with transesophageal pacing. The bipolar Medidyne catheter with a 50 mm electrode spacing was positioned near the right ventricle. Esophageal pacing of the ventricle in these dogs required that a balloon be placed behind the electrode. The results of the study showed that transesophageal pacing was accomplished in all three dogs. According to the applicant, the investigator reported that it was very difficult to effectively pace the ventricle without placing a balloon behind the electrode to press it against the posterior wall of the heart. Pacing at near the maximum current of 60 mA was required. The investigator also reported that the dogs were easily paced using the Stat-Pace II and the Medidyne catheter when placed in the right atrium or the right ventricle. According to the applicant, the conlcusions drawn from this study confirm that it is more difficult to pace the ventricle transesophageally than the atrium.

C. Clinical Studies

A total of 134 patients were studied with the Stat-Pace II for diagnostic and/or therapeutic purposes. Ninety-four patients were male and forty were female. Patients ranged in age from one day to 89 years. Sixteen investigators at seventeen institutions participated in the study.

To accomplish the desired diagnostic and therapeutic goals, the applicant studied the Stat-Pace II in two pacing modes.

1. Burst pacing is of short duration and at a rate greater than 130% of the patient's intrinsic cardiac rate.
2. Overdrive pacing is pacing at rates of 60 to 180 beats per minute (bpm) above the patient's intrinsic heart rate.

The applicant found that atrial pacing is optimized by positioning the electrodes at the point where the maximum P wave amplitude is obtained. The mean distance from the nares to the catheter tip at the optimum point is approximately 35 cm. For burst pacing, increased age and weight from infants to adults required additional current for transesophageal pacing. Pacing surrent and interelectrode spacing were shown to be independent parameters. It was found that the average current required to pace the heart increased with increased interelectrode spacing up to 22 mm but catheters with a spacing of 28 mm and 29 mm required less current. There was little correlation between interelectrode spacing (15-28 mm) and mean pacing threshold found in the literature.

The following tabulation shows the number of patients treated with the Stat- Pace II for various clinical conditions:

atrial flutter 36
paroxysmal supraventricular tachycardia 35
induction of increased heart rate for diagnostic studies 37
effectiveness study, normal sinus rhythm (NSR) 2
antiarrhythmic drug efficacy study 7
bradycardia and/or asystole 9
miscellaneous uses (studies of conduction, arrhythmia induction; treatment of wide QRS and ventricular tachycardias) 8

Of the various clinical uses of Stat-Pace II, only two had sufficient data to support premarket approval. These were:

1. The treatment of supraventricular tachycardias.

2. Induction of increased heart rate for diagnostic studies.

1. Atrial flutter

Thirty-six patients with atrial flutter (AF) were treated with the device with the goal of conversion to normal sinus rhythm (NSR). This goal was achieved in 17 patients (47%). A change in rhythm to atrial fibrillation (a more stable rhythm) occurred in 5 patients (14%). Several of those subsequently went into normal sinus rhythm. Failure to change rhythm was reported in 14 patients.

The pacing parameters used for the conversion of atrial flutter as well as other uses of the device which qualify as indications for use are tabulated in Table I. These parameters are of interest, although in practical use titration would be used to find the correct settings of Stat-Pace II.

Data from patients with atrial flutter demonstrated that for burst pacing, the duration of pacing required to convert the arrhythmia to NSR increased with patient age, size and weight. This relationship was not seen in overdrive pacing. Atrial flutter was converted by burst pacing more successfully than by overdrive pacing.

2. Paroxysmal supraventricular tachycardia (PSVT)

Stat-Pace II was used in treating 35 patients with supraventricular tachycardia. In some case reports, the information provided permitted subdivision into subcategories; otherwise cases were listed as "unspecified" (Refer to Table I). Twelve patients with paroxysmal atrial tachycardia (PAT) were treated, and all twelve were converted to NSR - a 100% success rate. Seven patients with Wolf-Parkinson-White Syndrome (WPW) were seen during a bout of tachycardia. All 7 were converted to NSR for a success rate of 100%. Sixteen patients with unspecified PSVT were treated with Stat-Pace II, and 14 were converted to NSR, representing an 88% success rate.

From the studies of patients who were treated for supraventricular tachycardia (SVT), the duration of pacing and amount of current required were found to be related to patient size, age and weight. The Stat-Pace II was reported to be somewhat more effective in burst pacing for PSVT than in overdrive pacing.

There were no device complications or adverse effects reported in the treatment of atrial flutter and paroxysmal supraventricular tachycardia with Stat-Pace II.

3. Induction of increased heart rate for diagnostic studies

The Stat-Pace II was used in 37 patients to increase heart rate for diagnostic studies. Thirty-four patients had two dimensional echocardiograph studies to detect heart wall motion abnormalities, and the device was used successfully in 30 of these patients (88%). The device was used successfully in one patient for a radionuclide study, and was used to increase heart rate to the point of chest pain in two patients suspected of having angina pectoris.

Sufficient numbers of patients in which the device had the desired effect supports this use of the device as an approved indication.

No device complications or adverse effects were noted in this use of Stat-Pace II.

TABLE I

This table presents stimulation parameters used to treat the clinical conditions which qualify as approved indications for use of Stat-Pace II on the basis of numbers of patients studied.

The width of stimulation pulse was 10 milliseconds in all cases.

Study of the Stat-Pace II was carried out with the stimulus voltage and stimulus current (in milliamperes) numerically the same. For instance, if a stimulus voltage of 25 volts was used, the stimulus current was set at 25 milliamperes. This numerical identity occurred because the resistance of the esophageal wall was found to vary between 300 and over 1000 ohms, so a value of 1000 ohms was selected for voltage and current measures.

Atrial flutter: treatment data

success AF to A fib failure

age range 1 day-83 yrs 13-66 yrs 1 da-72 yrs
pacing mode
burst 14 3 4*
overdrive 2 1 9
unspecified 1 1 2
voltage and current:
range, (mean) 12-28 (19) 12-25 (16.8) 10-40 (24)
pacing rate (bpm):
range, (mean) 150-500 (300) 125-400(220) 125-600 (371)
pacing duration (sec.):
range, (mean) 0.35-6.2 sec 1.2-10.1 1.2 sec-(2.15) (4.4) 4 min (38 sec)

*one patient had both burst and overdrive pacing modes used

Paroxysmal supraventricular tachycardia

A. Paroxysmal atrial tachycardia
All cases were treated successfully
age range 1 day-76 yrs
mode
burst 10
overdrive 1
unspecified 1
voltage and current: range, (mean) 10-20 (12.1)
pacing rate (bpm): range, (mean) 150-400 (340)
pacing duration 0.2-8.4 sec (1.6)

B. PSVT associated with WPW
All cases were successfully treated
age range 2-5 yrs-50 yrs
mode
burst 2
overdrive 3
unspecified 2
voltage and current: range, (mean) 12-20 (14)
pacing rate (bpm): range, (mean) 150-250 (202)
pacing duration 1.6-11.6 sec (5.5)

C. PSVT not further specified
success failure
age range 2 days-66 yrs 1 day-5 yrs
mode
burst 12 0
overdrive 2 2
voltage and current: range, (mean) 5-20 (12) 10-20 (15)
pacing rate (bpm): range, (mean) 175-400 (330) 200-300 (250)
pacing duration 0.06-60 sec 3.2-7.9 sec (6.8) (5.6)

Induction of increased heart rate for diagnostic studies
success failure
age range 35 yrs-69 yrs 53 yrs-62 yrs
mode
burst 0 0
overdrive 34 3
voltage and current: range, (mean) 12-45 (23.7) 25 (25)
pacing rate (bpm): range, (mean) 80-180 (133) 80 (80)
pacing duration: range, (mean) 2-6 min (5.3) 1-2 min (1.6)

The Stat-Pace II was studied for other clinical indications, but insufficient data were accrued to allow approval of such uses, which are discussed below.

1. Bradycardia and/or asystole

The device was used to treat 9 patients with these conditions. Pacing was successful in 4 cases (44%) and unsuccessful in 5. Five of the patients were moribund or had been in cardiac arrest for some time before the device

was used. This number of cases is too small for adequate evaluation of the device for these conditions or to allow the conditions to be used as indications for use. Because of the ease of insertion of the pacing lead as compared to temporary transvenous pacing, the device could find widespread application in emergency situations involving cardiac asystole and bradycardia when there is sufficient valid scientific evidence to provide reasonable assurance that the device is safe and effective for such use.

2. Anti-arrhythmic drug efficacy studies

The effectiveness of antiarrhythmic drug regimes was tested by using the device to attempt to induce the patient's arrhythmia while they were receiving the drugs, in a manner resembling programmed electrical stimulation (PES). When the arrhythmia was not induced, the possibility existed that either the drug therapy program was adequate or the device was not effective. When the arrhythmia was induced, the device was clearly effective and the drug program was not.

PAT could be induced in one patient. The tachycardia of WPW Syndrome was successfully induced in 4 patients. "Re-entry tachycardia" was induced in one patient. An atrial arrhythmia of a type not further specified was successfully induced in one patient.

There were a total of six patients in whom the device was used to study drug effectiveness. This small number, together with the uncertainty of negative results expressed above, is insufficient evidence to approve Stat-Pace II for this indication. A considerably longer patient follow-up might reveal whether failure to induce an arrhythmia in the presence of anti-arrhythmic drugs was a failure of the device or a success of the drug program.

6. Miscellaneous clinical uses of Stat-Pace II

The device was used in a number of other clinical situations, but in such small numbers that they will be grouped in this category.

The device was used on two test subjects in normal sinus rhythm. Capture was achieved in both. The overdrive pacing mode was used.

In one patient, the device was used to note its effect on conduction in WPW Syndrome. The outcome was deemed successful, although the clinical description of this use was not given in sufficient detail for an independent observer to make that judgment. In another patient, the tachycardia of WPW was successfully induced in a special study.

Stat-Pace II was used to attempt to trigger an arrhythmia of unspecified type in three patients not on antiarrhythmic medication. Success was achieved in two patients.

Wide QRS tachycardia in one patient was unsuccessfully treated. Ventricular tachycardia could not be converted in one patient.

The device was used unsuccessfully in an attempt to induce ventricular ectopy in one patient.

VII. CONCLUSIONS DRAWN FROM THE STUDIES

A. In Vitro studies of the Stat-Pace II showed that the device performed within specifications during quality control checks at various stages of assembly and after subjection to burn-in and cold-test procedures. Based upon the results of these tests, the Stat-Pace II can be considered safe and reliable for its intended use.

B. Animal studies of the device further supported the safety of Stat-Pace II at various current levels for transesophageal atrial pacing.

C. Clinical studies demonstrated that the device was safe and effective for use in those indications for which sufficient data were submitted.

A "temporary" pacing study encompassed the overdrive pacing studies for diagnostic purposes and patients treated for bradycardia. The trend that showed interelectrode spacing and required pacing current as independent pacing parameters was also demonstrated within this group.

VIII. PANEL RECOMMENDATIONS

At a public meeting of the Circulatory System Devices Panel held on April 21, 1986, the panel members agreed unanimously to recommend that CDRH approve the PMA for the Stat-Pace II on the condition that approval be limited to the indications for the treatment of supraventricular

tachycardia, displaying and recording the esophageal electrogram, and for increasing heart rate for diagnostic studies.

IX. FDA DECISION

On March 12, 1985, FDA completed an inspection of the manufacturing facilities and determined that the applicant was in compliance with the Good Manufacturing Practice (GMP) regulations. The applicant amended the PMA applications on

March 28, 1986 to provide the revised labeling required by CDRH. Based upon its review of the PMA as amended and the Panel's report and recommendation, CDRH notified the applicant by letter dated April 30, 1986 that the PMA for the Stat-Pace II was approved.

X. APPROVAL SPECIFICATIONS

FDA approval is subject to the applicant's compliance with the standard "Conditions of Approval" (Attachment A). In addition, the sale, distribution, and use of this device are restricted to prescription use in accordance with 21 CFR 801.109 within the meaning of section 520(e) of the act under the authority

of section 515(d)(1)(B)(ii) of the Federal Food, Drug and Cosmetic Act.

A draft final copy of the Stat-Pace II user's manual is attached (Attachment B) and is entitled "Stat-Pace II System for Diagnosis and Treatment of Cardiac Rhythm Disorders via Naso-Esophageal Catheter". All approved labeling is available to interested persons for inspection at the Food and Drug Administration, Center for Devices and Radiological Health, Document Mail Center (HFZ-401), 8757 Georgia Avenue, Silver Spring, Maryland 20910.

***ATTACHMENTS ON HARD COPY ONLY

16/9/3 (Item 1 from file: 198)
DIALOG(R)File 198:Health Devices Alerts(R)
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00698556 MDR-880254 SUBFILE: MDR
PRODUCT(s): 11-129 DEFIBRILLATOR/MONITORS
COMMON DEVICE NAME: DEFIBRILLATOR
IDENTIFIER: MODEL 78670A CATALOG NA

MANUFACTURER: HEWLETT PACKARD CO.

DEFIBRILLATOR CONNECTED TO ITS CHARGER BASE WAS BROUGHT TO A CARDIAC ARREST. IT WOULD NOT CHARGE ABOVE 30J EVEN THOUGH CHARGER BASE WAS CONNECTED TO AC POWER. LOW BATTERY INDICATOR WAS FLASHING EVEN THOUGH CHARGER BASE WAS CONNECTED TO AC POWER. PT SURVIVED. UNIT WAS TESTED BY HOSP BIOMEDICAL ENGINEER WHO FOUND BATTERY TO BE DEPLETED. BATTERY WAS RECHARGED IN A SEPARATE BATTERY CHARGER AND FOUND TO BE IN GOOD CONDITION. PROBLEM WAS FOUND IN MATING OF CONNECTORS ON CHARGER BASE AND DEFIBRILLATOR; THERE IS A NARROW RANGE IN WHICH PIN SUPPLYING POWER FOR MONITORING CIRCUITS MATES BEFORE TWO PINS SUPPLYING BATTERY CHARGING POWER ANND DEFIB CHARGING POWER. THIS CONDITION IS PROBABLY DUE TO WEAR ON 13-YEAR-OLD CONNECTORS OF TWO UNITS INVOLVED. IT CAN BE PREVENTED BY FULLY SEATING DEFIBRILLATOR INTO CHARGER BASE. HOSP PERSONNEL HAVE BEEN SO ADVISED.
SOURCE: M.D.R. REPORT DATED 6/28/96.
PUBLICATION DATE: 9606 EFFECT TYPE: MALFUNCTION
FDA PRODUCT CODE: LDD
MANUFACTURER DISCLAIMER: THE INFORMATION IN THIS REPORT IS SUBMITTED SOLELY TO COMPLY WITH SECTIONS 502(T) AND 519 OF THE FEDERAL FOOD, DRUG AND COSMETIC ACT AND TITLE 21, CODE OF FEDERAL REGULATIONS, PART 803-MEDICAL DEVICE REPORTING. NEITHER THE SUBMISSION OF INFORMATION NOR PUBLIC RELEASE OF SUCH INFORMATION CONSTITUTES AN ADMISSION, NOR SHALL BE

CONSTRUED AS AN ADMISSION, THAT A DEVICE HAS MALFUNCTIONED OR THAT A CAUSAL RELATIONSHIP BETWEEN A PRODUCT AND A DEATH OR SERIOUS INJURY EXISTS.

? ? t s17/2/all

17/2/1 (Item 1 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
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01590100 DIOGENES RECORD NUMBER: 1783790
MDR REPORT - FINAL LIFEPAK DEFIBRILLATOR/MONITOR MODEL 10. MALFUNCTION.
DEVICE CLASSIFICATION: (LDD) DC-DEFIBRILLATOR, LOW-ENERGY (INCLUDING PADDLES). 870-5300. 870.5300.
COMPANY NAME: PHYSIO-CONTROL CORP (PHYSCONT)
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA MDR LIST (MDR). LIST EDITION: FEBRUARY 2000
PUBLICATION DATE: April 29, 1994 (19940429)

17/2/2 (Item 2 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
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00229808 DIOGENES RECORD NUMBER: 1131462
MDR REPORT - FINAL : PHYSIO-CONTROL CORP.. LIFEPAK DEFIBRILLATOR MODEL 5 CATALOG 9-00285-08 SERIOUS INJURY
FDA NO.: M237761
DEVICE CLASSIFICATION: (LDD) DC-Defibrillator, Low-Energy (including Paddles). CLASS: 2. 870-5300. 870.5300.
COMPANY NAME: PHYSIO-CONTROL CORP (PHYSCONT)
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL (DVCIRC).
SOURCE: FDA MDR LIST (MDR). LIST EDITION: JUNE 1993.
PUBLICATION DATE: August 1, 1991 (19910801)

17/2/3 (Item 1 from file: 198)
DIALOG(R)File 198:Health Devices Alerts(R)
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00641163 MDR-504844 SUBFILE: MDR
PRODUCT(s): 11-129 DEFIBRILLATOR/MONITORS
COMMON DEVICE NAME: LIFEPAK DEFIBRILLATOR/MONITOR
IDENTIFIER: MODEL 10 CATALOG 804200-14

MANUFACTURER: PHYSIO-CONTROL CORP.

SOURCE: M.D.R. REPORT DATED 4/29/94.
PUBLICATION DATE: 9404 EFFECT TYPE: MALFUNCTION
FDA COMMENT: THE CAUSE OF THIS EVENT HAS NOT BEEN DETERMINED. IN ADDITION, AVAILABLE FREQUENCY AND SEVERITY DATA DO NOT INDICATE THAT ANY FURTHER INVESTIGATION IS NECESSARY AT THIS TIME. BOTH THE FREQUENCY AND SEVERITY OF THIS EVENT WILL BE PERIODICALLY MONITORED TO DETERMINE IF ANY FOLLOW-UP AND/OR OTHER ACTION IS INDICATED.
FDA PRODUCT CODE: LDD
MANUFACTURER DISCLAIMER: THIS INFORMATION IS COLLECTED AND REPORTED SOLELY IN ACCORDANCE WITH 21 CFR 803.24(E). IT IS UNVERIFIED AND IS NOT A RECOGNITION OR AN ADMISSION THAT THE PRODUCT DESCRIBED HEREIN WAS DEFECTIVE OR DANGEROUS IN ANY RESPECT. IT IS NOT A RECOGNITION OR AN ADMISSION OR ANY CAUSAL ASSOCIATION BETWEEN A PHYSIO-CONTROL CORPORATION PRODUCT AND ANY REPORTED, PRIOR, OR SUBSEQUENT EVENTS.

17/2/4 (Item 2 from file: 198)
DIALOG(R)File 198:Health Devices Alerts(R)
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00190526 MDR-237761 SUBFILE: MDR
PRODUCT(s): 11-129 DEFIBRILLATOR/MONITORS
COMMON DEVICE NAME: LIFEPAK DEFIBRILLATOR
IDENTIFIER: MODEL 5 CATALOG 9-00285-08

MANUFACTURER: PHYSIO-CONTROL CORP.

SOURCE: M.D.R. REPORT DATED 8/01/91.
PUBLICATION DATE: 9108 EFFECT TYPE: SERIOUS INJURY
FDA COMMENT: THE CAUSE OF THIS EVENT HAS BEEN DETERMINED TO BE THE RESULT OF THE DEVICE.
FDA PRODUCT CODE: LDD
MANUFACTURER DISCLAIMER: THIS INFORMATION IS COLLECTED AND REPORTED SOLELY IN ACCORDANCE WITH 21 CFR 803.24(E). IT IS UNVERIFIED AND IS NOT A RECOGNITION OR AN ADMISSION THAT THE PRODUCT DESCRIBED HEREIN WAS DEFECTIVE OR DANGEROUS IN ANY RESPECT. IT IS NOT A RECOGNITION OR AN ADMISSION OR ANY CAUSAL ASSOCIATION BETWEEN A PHYSIO-CONTROL CORPORATION PRODUCT AND ANY REPORTED, PRIOR, OR SUBSEQUENT EVENTS.
? t s18/2/all

18/2/1 (Item 1 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
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02334658 DIOGENES RECORD NUMBER: 2242523
MDR REPORT: MEDTRONIC PHYSIO-CONTROL CORP. LIFEPAK 10 DEFIBRILLATOR/MONITOR/PACEMAKER EXTERNAL DC DEFIBRILLATOR/CARDIAC MONITOR Model# 10 Catalog# 804200 - MALFUNCTION
FDA NO.: M3015876-2002-00437
DEVICE CLASSIFICATION: (LDD) DC-DEFIBRILLATOR, LOW-ENERGY (INCLUDING PADDLES) CLASS: 2 21 CFR: 870-5300 870.5300
COMPANY NAME: MEDTRONIC PHYSIO-CONTROL CORP. 11811 WILLOWS RD., N.E. REDMOND WA 98073
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA-MDR-LIST (MDR); LIST EDITION: NOVEMBER 2003
PUBLICATION DATE: November 11, 2002 ((20021111))

18/2/2 (Item 2 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
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01978126 DIOGENES RECORD NUMBER: 2045375
MDR REPORT: ZOLL MEDICAL CORP. 1600 SEMI AUTOMATIC DEFIBRILLATOR DEFIBRILLATOR Model# 1600 Catalog# 1600 - MALFUNCTION
FDA NO.: M1220908-2001-01040
DEVICE CLASSIFICATION: (MKJ) CODE UNDEFINED IN FDA LIST CLASS NOT PROVIDED BY FDA CFR CITATION NOT PROVIDED BY FDA
COMPANY NAME: ZOLL MEDICAL CORP. 32 SECOND AVE. BURLINGTON MA 01803
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA-MDR-LIST (MDR); LIST EDITION: NOVEMBER 2001
PUBLICATION DATE: August 02, 2001 ((20010802))

18/2/3 (Item 3 from file: 158)

DIALOG(R)File 158:DIOGENES(R)
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01951595 DIOGENES RECORD NUMBER: 2018844
MDR REPORT: MEDTRONIC PHYSIO-CONTROL CORP. LIFEPAK 10 DEFIBRILLATOR/MONITOR/PACEMAKER EXTERNAL DC DEFIBRILLATOR/CARDIAC MONITOR/TRANSCUTANEOUS PAC Model# 10 Catalog# 804200-28 - MALFUNCTION
FDA NO.: M3015876-2000-00186
DEVICE CLASSIFICATION: (LDD) DC-DEFIBRILLATOR, LOW-ENERGY (INCLUDING PADDLES) CLASS: 2 21 CFR: 870-5300 870.5300
COMPANY NAME: MEDTRONIC PHYSIO-CONTROL CORP. 11811 WILLOWS ROAD N.E. REDMOND WA 98073
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA-MDR-LIST (MDR); LIST EDITION: NOVEMBER 2001
PUBLICATION DATE: April 07, 2000 ((20000407))

18/2/4 (Item 4 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

01878227 DIOGENES RECORD NUMBER: 1945476
MDR REPORT: MEDICAL RESEARCH LABORATORIES, INC. MRL DEFIBRILLATOR/PACEMAKER/MULTI-FUNCT. MONITOR Model# PIC Catalog# 971015 - MALFUNCTION
FDA NO.: M1418729-2000-00037
DEVICE CLASSIFICATION: (MKJ) CODE UNDEFINED IN FDA LIST CLASS NOT PROVIDED BY FDA CFR CITATION NOT PROVIDED BY FDA
COMPANY NAME: MEDICAL RESEARCH LABORATORIES, INC. 1000 ASBURY DRIVE BUFFALO GROVE IL 60089
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA-MDR-LIST (MDR); LIST EDITION: NOVEMBER 2001
PUBLICATION DATE: November 14, 2000 ((20001114))

18/2/5 (Item 5 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

01876114 DIOGENES RECORD NUMBER: 1943363
MDR REPORT: ZOLL MEDICAL CORPORATION 1600 SEMI AUTOMATIC DEFIBRILLATOR DEFIBRILLATOR Model# 1600 Catalog# 1600 - MALFUNCTION
FDA NO.: M1220908-2000-01275
DEVICE CLASSIFICATION: (MKJ) CODE UNDEFINED IN FDA LIST CLASS NOT PROVIDED BY FDA CFR CITATION NOT PROVIDED BY FDA
COMPANY NAME: ZOLL MEDICAL CORPORATION 32 SECOND AVE. BURLINGTON MA 01803
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA-MDR-LIST (MDR); LIST EDITION: NOVEMBER 2001
PUBLICATION DATE: November 30, 2000 ((20001130))

18/2/6 (Item 6 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

01875934 DIOGENES RECORD NUMBER: 1943183
MDR REPORT: ZOLL MEDICAL CORPORATION PD1400 DEFIBRILLATOR/PACEMAKER DEFIBRILLATOR Model# PD1400 Catalog# PD1400 - MALFUNCTION
FDA NO.: M1220908-2000-01166
DEVICE CLASSIFICATION: (LDD) DC-DEFIBRILLATOR, LOW-ENERGY (INCLUDING

PADDLES) CLASS: 2 21 CFR: 870-5300 870.5300
COMPANY NAME: ZOLL MEDICAL CORPORATION 32 SECOND AVENUE BURLINGTON MA 01803
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA-MDR-LIST (MDR); LIST EDITION: NOVEMBER 2001
PUBLICATION DATE: November 01, 2000 ((20001101))

18/2/7 (Item 7 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

01375842 DIOGENES RECORD NUMBER: 768737
LIFEPAK 10 DEFIBRILLATOR/MONITOR/PACEMAKER: 510(K) LISTING. SUMMARY AVAILABLE FROM FOI SERVICES OR FDA
DEVICE CLASSIFICATION: (MPE) AUXILLARY POWER SUPPLY (AC OR DC) FOR EXTERNAL TRANSCUTANEOUS CARDIAC PACEMAKER. CLASS: 3. 21CFR: 870-555; 870.555
SUBMISSION DATE: 19941109
EQUIVALENCE CODE: (SE) SUBSTANTIALLY EQUIVALENT: TRADITIONAL SUBMISSION
COMPANY NAME: PHYSIO-CONTROL, 11811 WILLOWS ROAD NORTHEAST, P.O BOX 97006, REDMOND WA 980739706
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
DEVICE/DRUG NO.: K945511
SOURCE: FDA 510(K) LIST (510K). LIST EDITION: January 2000
PUBLICATION DATE: September 26, 1995 (19950926)

18/2/8 (Item 8 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

01250331 DIOGENES RECORD NUMBER: 1610087
MDR (MAUDE) REPORT: ZOLL MEDICAL CORP. PD1400 DEFIBRILLATOR/PACEMAKER MODEL PD1400 - MALFUNCTION.
DEVICE CLASSIFICATION: (DRO) PACEMAKER, CARDIAC, EXTERNAL TRANSCUTANEOUS (NON-INVASIVE). 870-5550. 870.5550.
COMPANY NAME: ZOLL MEDICAL CORP., 32 SECOND AVE , BURLINGTON, MA 01803
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA MDR LIST (MDR). LIST EDITION: JANUARY 1999
PUBLICATION DATE: February 19, 1998 (19980219)

18/2/9 (Item 9 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

00756485 DIOGENES RECORD NUMBER: 1433118
MDR REPORT - FINAL: VENTRITEX, INC. HVS 02 CARDIAC ELECTROPHYSIOLOGY DEVICE MODEL HV0200. SERIOUS INJURY.
DEVICE CLASSIFICATION: (LWS) DEFIBRILLATOR, AUTOMATIC IMPLANTABLE CARDIOVERTER. CFR CITATION NOT PROVIDED BY FDA.
COMPANY NAME: VENTRITEX, INC (VENTRITEX)
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
SOURCE: FDA MDR LIST (MDR). LIST EDITION: FEBRUARY 1997
PUBLICATION DATE: March 31, 1995 (19950331)

18/2/10 (Item 10 from file: 158)

DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

00326457 DIOGENES RECORD NUMBER: 1223790
MDR REPORT - FINAL.: PHYSIO-CONTROL CORP.. LIFEPAK DEFIBRILLATOR MODEL 8 CATALOG 802700-16 MALFUNCTION
FDA NO.: M356374
DEVICE CLASSIFICATION: (LDD) DC-Defibrillator, Low-Energy (including Paddles). CLASS: 2. 870-5300. 870.5300.
COMPANY NAME: PHYSIO-CONTROL CORP (PHYSCONT)
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL (DVCIRC).
SOURCE: FDA MDR LIST (MDR). LIST EDITION: JANUARY 1994.
PUBLICATION DATE: October 27, 1992 (19921027)

18/2/11 (Item 1 from file: 198)
DIALOG(R)File 198:Health Devices Alerts(R)
(c) 2004 ECRI-nonprft agncy. All rts. reserv.

00499258 MDR-705060 SUBFILE: MDR
PRODUCT(s): 17-577 AUTOMATIC IMPLANTABLE DEFIBRILLATOR FUNCTION ANALYZERS
COMMON DEVICE NAME: HVS 02 CARDIAC ELECTROPHYSIOLOGY DEVICE
IDENTIFIER: MODEL HV0200 CATALOG HV0200

MANUFACTURER: VENTRITEX, INC.

SOURCE: M.D.R. REPORT DATED 3/31/95.
PUBLICATION DATE: 9503 EFFECT TYPE: SERIOUS INJURY
FDA PRODUCT CODE: LWS
MANUFACTURER DISCLAIMER: THIS REPORT DOES NOT CONSTITUTE AN ADMISSION OF CULPABILITY FOR ANY AND/ORR ALL ASPECTS OF THIS EVENT AND MAY BE BASED UPON INCOMPLETE AND/OR UNSUBSTANTIATED INFORMATION. THE INFORMATION CONTAINED ABOVE IN SECTIONS 36 THROUGH 44 IS CONFIDENTIAL COMMERCIAL INFORMATIN OF VENTRITEX, INC. AND IS EXEMPT FROM DISCLOSURE PURSUANT TO 5 U.S.C. SECTION 552(B)(4).).

18/2/12 (Item 2 from file: 198)
DIALOG(R)File 198:Health Devices Alerts(R)
(c) 2004 ECRI-nonprft agncy. All rts. reserv.

00471926 MDR-356374 SUBFILE: MDR
PRODUCT(s): 11-129 DEFIBRILLATOR/MONITORS
COMMON DEVICE NAME: LIFEPAK DEFIBRILLATOR
IDENTIFIER: MODEL 8 CATALOG 802700-16

MANUFACTURER: PHYSIO-CONTROL CORP.

SOURCE: M.D.R. REPORT DATED 10/27/92.
PUBLICATION DATE: 9210 EFFECT TYPE: MALFUNCTION
FDA COMMENT: THE CAUSE OF THIS EVENT HAS NOT BEEN DETERMINED. HOWEVER, THE INFORMATION IN THIS REPORT AND/OR ITS FOLLOW-UP SUGGESTS THAT THE EVENT MAY HAVE BEEN CAUSED BY THE DEVICE. BOTH THE FREQUENCY AND SEVERITY OF THIS EVENT WILL BE PERIODICALLY MONITORED TO DETERMINE IF ANY FOLLOW-UP AND/OR OTHER ACTION IS INDICATED.
FDA PRODUCT CODE: LDD
MANUFACTURER DISCLAIMER: THIS INFORMATION IS COLLECTED AND REPORTED SOLELY IN ACCORDANCE WITH 21 CFR 803.24(E). IT IS UNVERIFIED AND IS NOT A RECOGNITION OR AN ADMISSION THAT THE PRODUCT DESCRIBED HEREIN WAS DEFECTIVE OR DANGEROUS IN ANY RESPECT. IT IS NOT A RECOGNITION OR AN ADMISSION OR ANY CAUSAL ASSOCIATION BETWEEN A PHYSIO-CONTROL CORPORATION PRODUCT AND ANY REPORTED, PRIOR, OR SUBSEQUENT EVENTS.

? t s18/9/7

18/9/7 (Item 7 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

01375842 DIOGENES RECORD NUMBER: 768737
LIFEPAK 10 DEFIBRILLATOR/MONITOR/PACEMAKER: 510(K) LISTING. SUMMARY AVAILABLE FROM FOI SERVICES OR FDA
DEVICE CLASSIFICATION: (MPE) AUXILLARY POWER SUPPLY (AC OR DC) FOR EXTERNAL TRANSCUTANEOUS CARDIAC PACEMAKER. CLASS: 3. 21CFR: 870-555; 870.555
SUBMISSION DATE: 19941109
EQUIVALENCE CODE: (SE) SUBSTANTIALLY EQUIVALENT: TRADITIONAL SUBMISSION
COMPANY NAME: PHYSIO-CONTROL, 11811 WILLOWS ROAD NORTHEAST, P.O BOX 97006, REDMOND WA 980739706
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
DEVICE/DRUG NO.: K945511
SOURCE: FDA 510(K) LIST (510K). LIST EDITION: January 2000
PUBLICATION DATE: September 26, 1995 (19950926)
RECORD TYPE: Citation
DOCUMENT TYPE: DEVICE (DEV)
LANGUAGE: English

? t s18/9/7

18/9/7 (Item 7 from file: 158)
DIALOG(R)File 158:DIOGENES(R)
(c) 2004 DIOGENES. All rts. reserv.

01375842 DIOGENES RECORD NUMBER: 768737
LIFEPAK 10 DEFIBRILLATOR/MONITOR/PACEMAKER: 510(K) LISTING. SUMMARY AVAILABLE FROM FOI SERVICES OR FDA
DEVICE CLASSIFICATION: (MPE) AUXILLARY POWER SUPPLY (AC OR DC) FOR EXTERNAL TRANSCUTANEOUS CARDIAC PACEMAKER. CLASS: 3. 21CFR: 870-555; 870.555
SUBMISSION DATE: 19941109
EQUIVALENCE CODE: (SE) SUBSTANTIALLY EQUIVALENT: TRADITIONAL SUBMISSION
COMPANY NAME: PHYSIO-CONTROL, 11811 WILLOWS ROAD NORTHEAST, P.O BOX 97006, REDMOND WA 980739706
ADVISORY COMMITTEE: CIRCULATORY SYSTEMS DEVICE PANEL DEVICE PANEL (DVCIRC)
DEVICE/DRUG NO.: K945511
SOURCE: FDA 510(K) LIST (510K). LIST EDITION: January 2000
PUBLICATION DATE: September 26, 1995 (19950926)
RECORD TYPE: Citation
DOCUMENT TYPE: DEVICE (DEV)
LANGUAGE: English

STN search


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=> file home
FILE 'HOME' ENTERED AT 13:28:21 ON 23 MAR 2004

=> display history full l1-


     FILE 'HCA' ENTERED AT 13:24:12 ON 23 MAR 2004
L1          284 SEA DEFIBRILLAT!R?
L2        16460 SEA (FIRST? OR PRIMARY OR PRINCIPAL?)(3A)(BATTERY OR
                BATTERIES OR (POWER OR ELEC# OR ELECTRIC? OR ENERG? OR
                VOLT? OR CURRENT?)(2A)(SOURC? OR SUPPLY? OR SUPPLIES OR
                SUPPLIED))
L3        48991 SEA (SECOND? OR ANCILLAR? OR ANCILAR? OR AUXILLAR? OR
                AUXILAR? OR BACKUP? OR BACK(W)UP)(3A)(BATTERY OR
                BATTERIES OR (POWER OR ELEC# OR ELECTRIC? OR ENERG? OR
                VOLT? OR CURRENT?)(2A)(SOURC? OR SUPPLY? OR SUPPLIES OR
                SUPPLIED))
L4       170117 SEA INDICATOR?
L5           52 SEA L1 AND L2
L6            8 SEA L1 AND L3
L7            0 SEA L1 AND L4
L8            7 SEA L5 AND L6
L9            8 SEA L6 OR L8


=> file hca
FILE 'HCA' ENTERED AT 13:28:43 ON 23 MAR 2004
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=> d l9 1-8 all

L9   ANSWER 1 OF 8  HCA  COPYRIGHT 2004 ACS on STN
AN   139:199962  HCA
ED   Entered STN:  18 Sep 2003
TI   Organic cyclic carbonate additives for nonaqueous electrolyte in
     alkali metal electrochemical cells
IN   Gan, Hong; Takeuchi, Esther S.
PA   Wilson Greatbatch Technologies, Inc., USA
SO   Eur. Pat. Appl., 12 pp.
     CODEN: EPXXDW
DT   Patent
LA   English
IC   ICM  H01M006-16
     ICS  H01M010-40
```

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 63

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1339121	A2	20030827	EP 2003-251016	20030219
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 2003162098	A1	20030828	US 2003-368658	20030219
	JP 2004039625	A2	20040205	JP 2003-89323	20030219
PRAI	US 2002-358199P	P	20020220		

OS MARPAT 139:199962

AB A lithium electrochem. cell of either a primary or a secondary chem. activated with an electrolyte having a cyclic carbonate of a ring size equal to or larger than a six-member ring is disclosed. The cyclic carbonate helps to make the anode passivation film ionically conductive to thereby eliminate voltage delay during pulse discharge and to reduce Rdc. Such a cell is particularly well suited for powering an implantable medical device, such as a cardiac **defibrillator.**

ST lithium battery nonaq electrolyte additive org cyclic carbonate; implantable medical device lithium battery nonaq electrolyte

IT Medical goods
(implantable; org. cyclic carbonate additives for nonaq. electrolyte in alkali metal electrochem. cells)

IT **Primary batteries**
Secondary batteries
(lithium; org. cyclic carbonate additives for nonaq. electrolyte in alkali metal electrochem. cells)

IT Battery electrolytes
(org. cyclic carbonate additives for nonaq. electrolyte in alkali metal electrochem. cells)

IT Alkali metals, uses
(org. cyclic carbonate additives for nonaq. electrolyte in alkali metal electrochem. cells)

IT 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 11105-02-5, Silver vanadium oxide 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
(org. cyclic carbonate additives for nonaq. electrolyte in alkali metal electrochem. cells)

IT 583037-46-1 583037-48-3 583037-50-7 583037-52-9 583037-54-1 583037-56-3 583037-57-4 583037-58-5
(org. cyclic carbonate additives for nonaq. electrolyte in alkali metal electrochem. cells)

L9 ANSWER 2 OF 8 HCA COPYRIGHT 2004 ACS on STN
AN 138:92633 HCA
ED Entered STN: 06 Feb 2003
TI Lithium batteries for biomedical applications
AU Takeuchi, Esther S.; Leising, Randolph A.
CS Wilson Greatbatch Technologies, Clarence, NY, USA
SO MRS Bulletin (2002), 27(8), 624-627
CODEN: MRSBEA; ISSN: 0883-7694
PB Materials Research Society
DT Journal; General Review
LA English
CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 63
AB A review. Lithium batteries have been successfully used in implantable biomedical devices for the last 30 yr, and in some cases the use of lithium power sources has significantly contributed to the viability of the device. These battery systems fall into two major categories: (a) primary, or single-use, cells contg. lithium metal anodes and (b) secondary, or rechargeable, systems utilizing lithium-ion chem. **Primary** lithium **batteries** have been used for implantable devices such as cardiac pacemakers, drug pumps, neurostimulators, and cardiac **defibrillators.** Rechargeable batteries have been used with left ventricular assist devices and total artificial hearts. All of these batteries share the characteristics of high safety, reliability, energy d., and predictability of performance. Addnl., state-of-charge indication and low self-discharge are important features, along with charging safety and high cycle life for rechargeable batteries.
ST review lithium battery biomedical device
IT Prosthetic materials and Prosthetics
(implants; lithium batteries for biomedical applications)
IT **Primary batteries**
Secondary batteries
(lithium; lithium **batteries** for biomedical applications)
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Drews, J; J Power Sources 1997, V65, P129 HCA
(2) Drews, J; J Power Sources 1999, V80, P107 HCA
(3) Drews, J; J Power Sources 2001, V97-98, P747 HCA
(4) Fehrmann, G; US 5587258 1996 HCA
(5) Greatbatch, W; 10th Int Congress on Cardiac Pacing and Electrophysiology and Cardiac Pacing 1996
(6) Greatbatch, W; IEEE Trans Biomed Eng 1979, VBME-26, P306
(7) Greatbatch, W; The Making of the Pacemaker 2000, P119
(8) Holmes, C; ITE Batt Lett 1999, V1, P132 HCA
(9) Holmes, C; J Power Sources 2001, V97-98, P739 HCA

(10) Leising, R; Inorg Chem 1994, V33, P5733 HCA
(11) Leising, R; J Electrochem Soc 2001, V148, PA838 HCA
(12) Liang, C; Prog Batt Solar Cells 1979, V2, P50 HCA
(13) Piffard, Y; J Power Sources 1997, V68, P698 HCA
(14) Schlaikjer, C; Lithium Batteries 1983, P303 HCA
(15) Schmidt, C; J Power Sources 1997, V65, P121 HCA
(16) Skarstad, P; Batteries for Implantable Biomedical Devices 1986, P215
(17) Takeuchi, E; A Comprehensive Textbook 1994, P123
(18) Takeuchi, E; J Electrochem Soc 1988, V135, P2691 HCA
(19) Takeuchi, E; Proc 7th Annu Battery Conf on Applications and Advances 1992
(20) Takeuchi, K; Coord Chem Rev 2001, V219-221, P283 HCA
(21) Watanabe, N; US 3536532 1970
(22) Watanabe, N; J Power Sources 1987, V20, P87 HCA

L9 ANSWER 3 OF 8 HCA COPYRIGHT 2004 ACS on STN
AN 136:219532 HCA
ED Entered STN: 28 Mar 2002
TI High rate batteries with metal vanadium oxides for implantable medical devices
IN Ghantous, Dania I.; Chaloner-Gill, Benjamin; Chiruvolu, Shivkumar; Banfol, Devendra R.; McGovern, William E.; Cornell, Ronald M.; Hoang, Khanh; Pinoli, Allison A.
PA Nanogram Corporation, USA
SO PCT Int. Appl., 107 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01M004-34
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 63
FAN.CNT 23

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002019448	A1	20020307	WO 2001-US41902	20010828
	W: CN, JP, KR				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	US 6503646	B1	20030107	US 2000-649752	20000828
	EP 1338043	A1	20030827	EP 2001-964649	20010828
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	JP 2004508669	T2	20040318	JP 2002-524243	20010828
	US 2003077513	A1	20030424	US 2002-303622	20021125
PRAI	US 2000-649752	A	20000828		
	WO 2001-US41902	W	20010828		

AB Improved high rate batteries based on silver vanadium oxide yield improved pulsed performance. In particular, batteries comprise an

electrolyte having lithium ions and a cathode comprising silver vanadium oxide. Improved batteries have a pulsed specific energy of at least about 575 mW-h/g when pulsed in groups of four-10 s pulses at a c.d. of 25 mA/cm2 spaced by 15 s between pulses and with 30 min between pulse groups down to a discharge voltage of 1.5 V. In addn., improved batteries can achieve high max. specific powers, high current densities and no voltage delay in pulsed operation. The batteries are particularly suitable for use in implantable medical devices, such as, **defibrillators**, pacemakers or combinations thereof. Improved processing approaches are described.

ST battery silver vanadium oxide implantable medical device

IT Prosthetic materials and Prosthetics
(cardiovascular implants, **defibrillators**; high rate batteries with metal vanadium oxides for implantable medical devices)

IT Acrylic polymers, uses
EPDM rubber
Fluoropolymers, uses
Polyoxyalkylenes, uses
(high rate batteries with metal vanadium oxides for implantable medical devices)

IT Prosthetic materials and Prosthetics
(implants, artificial heart pacemaker; high rate batteries with metal vanadium oxides for implantable medical devices)

IT **Secondary batteries**
(lithium; high rate batteries with metal vanadium oxides for implantable medical devices)

IT Heart
(pacemaker, artificial; high rate batteries with metal vanadium oxides for implantable medical devices)

IT 1314-62-1, Vanadium pentoxide, processes 7761-88-8, Silver nitrate, processes 12036-21-4, Vanadium oxide vo2 12037-42-2, Vanadium oxide v6o13 13520-87-1, Vanadium chloride oxide
(high rate batteries with metal vanadium oxides for implantable medical devices)

IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 75-12-7, Formamide, uses 75-52-5, Nitromethane, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 111-96-6, Diglyme 112-49-2, Triglyme 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0, Dioxolane 7439-93-2, Lithium, uses 11105-02-5, Silver vanadium oxide 12026-36-7, Silver vanadium oxide Ag2V4O11
(high rate batteries with metal vanadium oxides for implantable medical devices)

IT 7440-44-0, Carbon, uses 9002-84-0, Ptfe 9002-88-4, Polyethylene 9003-07-0, Polypropylene 13497-94-4, Silver metavanadate

24937-79-9, Pvdf 25322-68-3, Peo
(high rate batteries with metal vanadium oxides for implantable medical devices)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Crespi; US 5221453 A 1993 HCA
(2) Crespi; US 5766797 A 1998 HCA
(3) Takeuchi; US 5389472 A 1995 HCA
(4) Takeuchi; US 5498494 A 1996 HCA

L9 ANSWER 4 OF 8 HCA COPYRIGHT 2004 ACS on STN
AN 133:256597 HCA
ED Entered STN: 20 Oct 2000
TI Batteries for biomedical implantable devices
AU Holmes, C. F.; Leising, R. A.; Spillman, D. M.; Takeuchi, E. S.
CS Wilson Greatbatch Ltd., Clarence, NY, 14031, USA
SO ITE Battery Letters (1999), 1(1), 132-134
CODEN: IBLEFX
PB ITE-JEC Service Inc. (Japan)
DT Journal; General Review
LA English
CC 63-0 (Pharmaceuticals)
Section cross-reference(s): 52
AB A review, with 134 refs. Implantable power source for cardiac pacemakers, **defibrillators**, and neurostimulators for pain relieve have contributed to the health of millions of patients for the last 40 yr. Most of these devices have been and will continue to be powered by primary Li cells. A new generation of devices requiring sec. batteries is currently under development. It is believed that Li ion batteries specifically designed to meet the requirements of these devices will provide to be safe, reliable, and effective power sources for this new generation of health-enhancing, life-saving biomedical implantable devices.
ST review lithium battery biomedical implantable device
IT Medical goods
Primary batteries
Secondary batteries
(**batteries** for biomedical implantable devices)
IT 7439-93-2, Lithium, biological studies
(batteries for biomedical implantable devices)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ball, G; US 5624376 1997
(2) Crespi, A; The Design of Batteries for Implantable Cardioverter Defibrillators 1995, P349 HCA
(3) Greatbatch, W; Proc New England Research and Eng Meeting (NEREM) 1959, V1, P8
(4) Holmes, C; Lithium Batteries - New Materials, Developments, and

Perspectives, Elsevier Science 1994, P383
(5) Keister, P; US 4830940 1989 HCA
(6) Liang, C; US 4310609 1982 HCA
(7) Medtronic Inc; Annual Shareholders 1996, P45
(8) Mirowski, M; Amer Heart J 1980, V100, P1089 MEDLINE
(9) Mussivand, T; Cor Europaeum 1997, V6, P110
(10) O'Conner, L; Mech Eng 1991, P36
(11) Terry, R; Epilepsia 1990, V31(Suppl 2), PS33
(12) Visbisky, M; J/ Power Sources 1989, V26, P185 HCA

L9 ANSWER 5 OF 8 HCA COPYRIGHT 2004 ACS on STN
AN 128:182505 HCA
ED Entered STN: 07 Apr 1998
TI Pulse applications of electrochemical cells - materials aspects
AU Huggins, Robert A.
CS Energy Storage and Conversion Division, Center for Solar Energy and Hydrogen Research, Ulm, D-89081, Germany
SO Ionics (1995), 1(1), 5-20
CODEN: IONIFA; ISSN: 0947-7047
PB Institute for Ionics
DT Journal
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 63, 72, 76
AB There is a rapidly increasing need for energy sources that are optimized to provide elec. energy at high power for short times. The terms "ultracapacitor" and "supercapacitor" are often used to describe some types of such devices. Applications include the requirement for very short pulses for digital electronic devices, the somewhat longer power pulse demands of heart **defibrillators** and other implantable medical devices, and the much larger transient power needs in connection with elec. vehicle traction. The several mechanisms that can be used to store and provide pulse energy in electrochem. systems are reviewed. Their fundamental characteristics, as well as their applicability to the different types of pulse output requirements, are discussed. The use of spreadsheet techniques to model transient transport behavior in solids under various conditions, as well as the use of Laplace transform methods to convert information about the phys. mechanisms and parameters of individual components into the dynamic response of an electrochem. system are demonstrated.
ST pulse application electrochem cell; battery electrode material aspect; capacitor electrode material aspect
IT Power
(generation; pulse applications of electrochem. cells and materials aspects)
IT Battery electrodes
Capacitors

Primary batteries
Secondary batteries
(pulse applications of electrochem. cells and materials aspects)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Boukamp, B; J Electrochem Soc 1981, V128, P725 HCA
(2) Conway, B; J Electrochem Soc 1991, V138, P1539 HCA
(3) Conway, B; Proceedings of Symposium on New Sealed Rechargeable Batteries and Supercapacitors 1993, P15 HCA
(4) Craig, D; CA 1196683 1985 HCA
(5) Craig, D; European Patent Application 82,109,061.0 1983
(6) Ho, C; J Electrochem Soc 1980, V127, P343 HCA
(7) Liebert, B; Proceedings of Symposium on Electrode Materials and Processes for Energy Conversion and Storage 1977, P821 HCA
(8) L'Vov, A; Elektrokhimiya 1975, V11, P1322 HCA
(9) Nishino, A; Proceedings of Symposium on New Sealed Rechargeable Batteies and Supercapacitors 1993, P1 HCA
(10) Raistrick, I; Proceedings of Symposium on Electrode Materials and Processes for Energy Conversion and Storage 1987, P582 HCA
(11) Raistrick, I; Solid State Ionics 1981, V5, P351 HCA
(12) Raistrick, I; Solid State Ionics 1982, V7, P213 HCA
(13) Wagner, C; J Chem Phys 1953, V21, P1819 HCA
(14) Wen, C; International Metals Reviews 1981, V5, P253
(15) Weppner, W; Annual Review of Materials Science 1978, P269 HCA
(16) Weppner, W; J Electrochem Soc 1977, V124, P1569 HCA

L9 ANSWER 6 OF 8 HCA COPYRIGHT 2004 ACS on STN
AN 123:13761 HCA
ED Entered STN: 08 Jul 1995
TI Hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators
IN Fehrmann, Gerhard; Froemmel, Rainer; Wolf, Ruediger
PA Litronik Batterietechnologie GmbH und Co., Germany
SO Ger. Offen., 9 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM H01M004-50
ICS H01M004-48; H01M010-40; H01M004-38; A61N001-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 9, 63
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4438784	A1	19950427	DE 1994-4438784	19941019
	DE 4438784	C2	19980219		
PRAI	DE 1993-4336423		19931020		

AB A hermetically sealed Li battery with reduced self discharge

comprises a cathode (contg. CrOx (x=2.5-2.7), MnO2, PbCrO4, PbMoO4, PbO, soot, graphite), an anode (Li), and an electrolyte (propylene carbonate, ethylene carbonate, DME, LiClO4), which is useful as an implantable device, suitable for a **defibrillator** or nerve stimulator.

ST lithium battery implantable **defibrillator**; nerve stimulator implantable lithium battery

IT Soot
(cathode; hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators)

IT Heart
(**defibrillator**, implantable; hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators)

IT **Batteries, primary**
Batteries, secondary
(implantable; hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators)

IT Medical goods
(nerve stimulators, implantable; hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators)

IT 7439-93-2, Lithium, uses
(anode; hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators)

IT 1313-13-9, Manganese dioxide, uses 1317-36-8, Lead oxide, uses 7758-97-6, Lead chromate 7782-42-5, Graphite, uses 10190-55-3, Lead molybdate 11118-57-3, Chromium oxide
(cathode; hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators)

IT 7789-00-6, Potassium chromate 10099-74-8, Lead nitrate 13106-76-8, Ammonium molybdate
(cathode; hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 13453-71-9, Lithium chlorate
(electrolyte; hermetically sealed implantable lithium batteries, useful for **defibrillators** or nerve stimulators)

L9 ANSWER 7 OF 8 HCA COPYRIGHT 2004 ACS on STN
AN 121:39066 HCA
ED Entered STN: 23 Jul 1994
TI Implantable lithium power sources
AU Holmes, Curtis F.
CS Technol. Div., Wilson Greatbatch Ltd., Clarence, NY, 14031, USA
SO Industrial Chemistry Library (1994), 5(LITHIUM BATTERIES), 377-416
CODEN: ICHLE6; ISSN: 0926-9614
DT Journal; General Review

LA English
CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 63
AB A review with 76 refs. of the field of implantable Li batteries. Cardiac pacemakers, implantable **defibrillators**, medium-current devices (e.g., drug delivery systems and neurostimulators), and devices requiring **secondary batteries** are described.
ST review lithium implantable battery; cardiac pacemaker implantable lithium battery review; medical device implantable lithium battery review
IT Medical goods
(implantable, lithium batteries for)
IT **Batteries, primary**
(lithium, implantable, for cardiac pacemakers and medical devices)
IT **Batteries, secondary**
(lithium, implantable, for medical devices)
IT Heart
(pacemaker, artificial, lithium batteries for, implantable)

L9 ANSWER 8 OF 8 HCA COPYRIGHT 2004 ACS on STN
AN 111:10162 HCA
ED Entered STN: 08 Jul 1989
TI Implantable power sources - an overview
AU Holmes, Curtis F.
CS Wilson Greatbatch, Ltd., Clarence, NY, 14031, USA
SO Proceedings - Electrochemical Society (1989), 89-4(Proc. Symp. Mater. Processes Lithium Batteries, 1988), 42-55
CODEN: PESODO; ISSN: 0161-6374
DT Journal; General Review
LA English
CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 63
AB A review with 36 refs. on development and use of Li batteries in medical implantable devices, i.e. pacemakers, neurostimulators, drug delivery systems, and **defibrillators**. Alk. Zn/HgO, Ni/Cd, Li/I, Li/Ag2CrO4, Li/SOCl2, and rechargeable Li batteries are discussed.
ST review lithium battery implantable device; pacemaker neurostimulator lithium battery review; drug delivery lithium battery review; **defibrillator** implant lithium battery review
IT **Batteries, primary**
Batteries, secondary
(lithium, for implantable devices)
IT Prosthetic materials and Prosthetics
(implants, lithium batteries for)